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[See page 20]

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ARMOR

The Magazine of Mobile Warfare

Continuation of THE CAVALRY JOURNAL

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LETTERS to the EDITOR

Combat Command C?

Dear Sir:

I read with interest the article on "The New Armored Division Organization" by Major General Bruce C. Clarke and Brigadier General L. L. Doan in the November-December issue of ARMOR. I am in accord with most of the article and with the employment of the Reserve Command, 1st Armored Division on exercise LONG HORN. I have great respect for the ability of both General Clarke and General Doan. There is, however, one principle on the organization and employment of the Armored Division expressed by the writers with which I cannot agree. I know personally many other well qualified Armor officers who share with me the point of view I am about to express.

The Armored Division is organized on the "triangular concept" to provide the flexibility so ably described by the Chief of Staff, General J. Lawton Collins, in his article in the November issue of *Combat Forces Journal*, "Stress the Fundamentals." All of the Combat Command Headquarters in the division are organized identically and are capable of performing identical missions. It is unfortunate that one of these Combat Commands has been mis-labelled "Reserve Command," and given an additional mission neither in keeping with the "triangular concept" nor assigned to the other Combat Commands. If we are to have the desired flexibility within the Armored Division any one of three Combat Commands may find itself in reserve (and, as a matter of fact, should from time to time) and must then be capable of performing the rehabilitation mission ascribed to the Reserve Command in the article in question. To assume that the same Combat Command will always be in reserve is unsound from a practical standpoint. It is a violation of the principle of flexibility. It violates the "triangular concept" on which our Army and doctrine are based. It will have an adverse psychological effect on units tabbed as "reserve" by SOP. It can be construed, by the inference of its title and implied primary role, as an infringement on the prerogative of command.

That I am not a lone wolf crying in the wilderness is evidenced by the present organization of the 2d Armored Division. It has three Combat Commands, Combat Command "A," Combat Command "B," and Combat Command "R," with the headquarters organized and trained to perform identical missions. There is no Reserve Command. The announced policy of the present Division Commander, Major General George Read, is that the situation and division mission will dictate which combat command is in division reserve and which are committed to combat.

In furtherance of this concept, it is

felt that combat commands should be redesignated so as to remove any such undesirable connotations as now exist. A consecutive numerical designation for each combat command is proposed. Thus, in the 1st Armored Division the combat commands would be designated CC-1, CC-2 and CC-3; the 2d Armored Division would be CC-4, CC-5 and CC-6, and so on throughout the other armored divisions. These distinctive designations would permit rapid identification of combat commands without reference to the parent division. This would preclude the possibility of any confusion when two or more armored divisions are operating in the same area as was frequently the case in World War II.

Now that this point has been raised, I feel you can do a great service to Armor by furthering this discussion and obtaining the views of others on this controversial subject.

COL. BOGARDUS S. CAIRNS
CO, CCR 2d Armd Div

APO 42

Dear Sir:

Reference is made to the article "The New Armored Division Organization" by Generals Clarke and Doan beginning on page 42 of the November-December 1952 issue of ARMOR, specifically the paragraph which concludes with the sentence, "When circumstances require it, the reserve command may be used as a fighting force for short periods of time." The Armored School teaches that the reserve command is employed exactly the same as the other two combat commands. This is certainly logical as the organization of the headquarters of the reserve command is identical throughout to the other two combat commands. This also complies with the principles enunciated by General Collins concerning the value and employment of triangular organization. In no way, however, should this doctrine

be interpreted as reducing the flexibility of armored organization.

The Commanding General of the Second Armored Division has recommended that the name of the reserve command be changed to something that definitely indicates its equality to Combat Commands A and B. In this the Armored School wholeheartedly concurs.

LT. COL. WILLIAM T. HAMILTON, JR.
Secretary, TAS
Ft. Knox, Ky.

Need of Belonging

Dear Sir:

Lt. James L. Morrison shouldn't have been so bashful in presenting his answer to the problem of better troop *esprit de corps* in his article "For Garry Owen and Glory" which appeared in the Nov-Dec '52 issue of ARMOR.

The question can no longer be one of *should* such a system be adopted. It has become a question of "When?!"

Maj. Gen. C. L. Scott's article, entitled The Replacement System, in the same issue, presents some of the formidable reasons why a system of unit integrity, from induction to demobilization (or individual discharge) *must* be adopted.

General S. L. A. Marshall's *Men Against Fire* and the whole document of military history provide all the other reasons any planning body would need.

I was disappointed, however, not to find in Lt. Morrison's fine article the words "National Guard."

In the Guard, the Army has, ready-made, almost the exact system which Lt. Morrison and many others of similar bent recommend. Organized at home, bolstered by community, as well as unit spirit, and by a record of service 140 years longer than that of the regular establishment, the National Guard of the US provides the framework for the adoption of the unit integrity principle, not years hence, but *now*.

At the present time the National Guard is battered by a ruthless Regular recruiting policy. It is sapped by drafting of its hard-gained recruits and

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Rates: See bottom of contents page.

plagued by break-up of its units inducted, as units, into the Federal service.

How many of the men enticed, or dragged, into the Federal service as individuals are more efficient or better adjusted soldiers now than they would have been if they had entered the service as members of a unit and been kept in that unit?

For the past 15 months I have talked to many men called into Federal service with National Guard units early in the Korean emergency.

Many of them, far too many, are bitter men. Ask them whether they are willing to reaffiliate themselves with a reserve component and all you get back is a sardonic laugh.

In each and every case, the reason underlying the present bad feeling was not that the individual had been taken away from home and family, for either the first or the second time, but that *his outfit had been broken up and that he and his buddies had been scattered to the four winds, malassigned and their individual skills and abilities ignored or misused.*

For years the Army and Air Force have envied the Marines their magnificent *esprit de corps*. The army has spent considerable effort and a not inconsiderable sum of money on public information projects designed to enhance Army prestige. Somebody has even got the idea that all that has to be done is to find the Army a catchy song, something along the lines of the Marine Corps Hymn, and we'll be all set.

The answer lies in the maximum employment of the National Guard and eventually the Regular Army and Reserves along the general path outlined in Lt. Morrison's article.

The Marine Corps is compact enough to excite the spirited devotion of all its members. Because of this the Marines have wisely toned down emphasis on any one Marine division, emphasis that might lessen devotion to the corps as a whole. The Army, and to a lesser extent, the Air Force, however, are just too big to be loved all at once. But the division, the regiment, the battalion,

and the company aren't too big.

Camaraderie and *esprit de corps* developed by use of the principle of genuine unit integrity in units of division-size and smaller will develop in the individual soldier what Lt. Morrison has described as the "feeling of deep pride in the fact that he has served his country to the best of his ability in an organization whose name will forever stir fond memories within his heart."

LT. WILLIAM V. KENNEDY
A.F., NGUS

Mechanicsburg, Pa.

Skeleton in the Closet

Dear Sir:

This magazine was, after all, once upon a time the *Cavalry Journal*. It must still be read by not a few rather horsey people. Hence, the following upon the best loved, perhaps, equine in History: "Marengo."

Marengo was Napoleon's favourite steed, and he was of the famous whitish in colour, like the Mercedes-Benz racing team in the current 20th Century era. In Whitehall, home of the well-known British "Blues," on the left going towards olde Westminster, is the skeleton of the great *Pferd* in the really excellent Royal United Service Museum. Thousands of people, French, English, and even Ameddican (inc. the writer), stop to admire Marengo, and there he is in bony structure.

Marengo is 14 hands high (plus one inch), and the Little Corporal (blessed be His name) bought him in Egypt after the famous battle at Aboukir. The fine little fellow bore the Corporal at Marengo (1800), hence his august name, and also at 1806's Jena, where the celebrated Prussian Guards collapsed. Subsequently, Marengo travelled with Bonaparte to Wagram (1809) when Vienna was taken for the second time. Goode old Marengo also marched on the retreat from Moscow (1812); and Vernet, the artist, has pictured him crossing the Alps en route to the Marengo field in Lombardy.

Marengo was wounded at Waterloo, and also captured, as Napoleon fled by

coach. The writer finds *five* pictures of him, quite by accident, in his living room. Then, Lord Petre achieved Marengo and took him to England, where he was kindly treated as a matter of course. General Angerstein, of the King's German Legion purchased the splendid little "barb" and kept him in triumph at Ely, where he bred freely. Marengo died of a happy olde age, and snuff boxes were made of his hooves, one being still at St. James' Palace. He was the idol of England, just as Hitler's fine Mercedes has become an idol in America. Marengo was, and is, an English rally-point, and since very many inquiring people ask for him, it is a pleasure for a returned traveller to furnish this indispensable information.

ROGER SHAW

Hartford, Conn.

Off-Duty Study

Dear Sir:

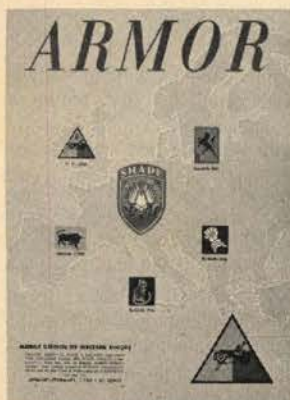
As a reserve officer of some nine years of commissioned service, I have been distressed by the lack of enthusiasm displayed by many of the young, recently commissioned officers for professional training during non-duty hours. There are many ways in which this may be accomplished; extension courses, professional reading, USAFI courses; yet the reports of enrollments in these courses are far from encouraging; in my own unit, the number of officers attending these courses, particularly the young regulars who have so much to gain by professional study, is tragically small.

There is a crying need for encouraging professional self-improvement, and I believe that ARMOR is in a position to do much to correct the situation. There are three things which I believe should be done.

First, encourage self-study through the medium of extension courses of The Armored School. This can be done editorially and by short articles in "Sum and Substance" by senior officers, which state the value these courses have had in furthering their professional training. Secondly, publish more articles similar to the one by Mrs. B. A. Patton on professional reading. I can think of nothing that strengthened more my own desire to continue my professional reading. Thirdly, and to my mind most important, publish a list, from time to time, of books which will enhance professional study, particularly in conjunction with extension courses presented by The Armored School. Such a bibliography would be invaluable in correlating current thought and doctrine to thought and doctrine of past years and sources other than our service schools.

In times of international tension, the failure of an officer to continue his professional self-improvement and to widen the horizons of his knowledge through reading and study is tantamount to criminal negligence.

CAPT. MORTON SEMELMAKER
S2, 3d Armd Cav Regt
Camp Pickett, Va.



THE COVER

Western Europe is the classic area for Continental warfare, which is to say mobile warfare. Against the background of history it is strange that the Western Powers hold to a balance in their ground forces which leans to infantry rather than the mobile element, armor. A rampaging Red drive to the West could best be countered by highly mobile defense. Our five Allied armored divisions are a core for continental action.

NEW CIVILIAN

Commander in Chief



New York Times
Dwight D. Eisenhower

Dwight David Eisenhower . . . United States Military Academy, Class of 1915 . . . second professional soldier to be president (Grant) . . . infantry troop officer and instructor to 1918 . . . commanded Tank Corps troops at Fort Dix and Fort Benning from 1918 to 1919 . . . commanded tank battalions at Fort Meade, Md., from 1919 to 1922 . . . graduated from the Infantry Tank School in this period . . . troop, staff and school assignments to 1935, when he became Assistant to the Military Advisor, Commonwealth of the Philippine Islands, General MacArthur . . . Chief of the War Plans Division, War Department General Staff, February 1942 . . . ACoS Operations, March 1942 . . . appointed Commanding General, European Theater, June 1942 . . . commanded American forces in the North African invasion, November 1942 . . . Supreme Commander, Allied Expeditionary Forces, planning and coordinating land, sea and air forces for the Normandy invasion, December 1943 . . . commanded Normandy invasion, June 6, 1944 . . . Military Governor U.S. Occupied Zone in Germany . . . Chief of Staff, United States Army, November 19, 1945 . . . president of Columbia University, June 7, 1948 . . . designated Supreme Allied Commander, Europe, on December 16, 1950, with operational command of all U.S. forces in Europe . . . retired from active service May 31, 1952 . . . resigned commission July 18, 1952 . . . sworn in as President, January 20, 1953.

Secretary of Defense

Charles Erwin Wilson . . . born in Minerva, Ohio in 1890 . . . Carnegie Institute of Technology graduate in 1909 as electrical engineer . . . became a student apprentice shortly thereafter



General Motors
Charles E. Wilson

with Westinghouse Electric & Manufacturing Company . . . in 1912 designed the first automobile starting motors made by Westinghouse . . . given charge in 1916 of all its automobile electrical equipment engineering . . . in World War I he was in charge of design and development of Westinghouse radio generators and dynamotors for the Army and Navy . . . joined General Motors in 1919 as chief engineer and sales manager of the automobile division of Remy Electric Co., GM subsidiary in Detroit . . . on to Anderson, Indiana to become chief engineer . . . factory manager in 1921 and general manager in 1925 . . . president and general manager of Delco-Remy Corporation in 1926 . . . vice president of General Motors in Detroit in 1928 . . . executive vice president 1929 . . . acting president of GM when William S. Knudsen joined the government on war production, 1940 . . . elected president of GM in January 1941, the post he held at the time of his nomination to be Secretary of Defense, succeeding Robert M. Lovett . . . approval by Armed Services Committee and Senate confirmation followed action to dispose of GM interests.

Deputy Secretary of Defense

Roger M. Kyes . . . a native of East Palestine, Ohio . . . broad experience in business and industry . . . special studies in business administration and administrative engineering . . . cum laude graduate of Harvard in 1928 . . . for the next two years assistant to the president of Glenn L. Martin company, with offices in Baltimore and Cleveland . . . assistant to the president of Black and Decker Manufacturing company at Towson, Md., from 1930 to 1932 . . .



General Motors
Roger M. Kyes

became vice president of the Empire Plow Company in Cleveland in 1932 . . . in 1941 named executive vice president and general manager of the Ferguson-Sherman Manufacturing Company . . . later became president of that Detroit firm, manufacturing tractors and agricultural equipment . . . joined General Motors in 1948 . . . for two years he was executive in charge of procurement and schedules . . . elected general manager of the Truck and Coach division . . . then vice president of the General Motors corporation, present position at the time of appointment to the second spot in the Defense Department . . . is 46 years old . . . has worked closely with the new Secretary of Defense in the GM corporation . . . succeeded William C. Foster as Deputy Secretary of Defense following Armed Services Committee and Senate approval of his action to dispose of GM holdings.

TOP COMMAND

Secretary of the Army

Robert Ten Broeck Stevens . . . born in Fanwood, New Jersey in 1899 . . . received his bachelor's degree from Yale University . . . graduate degrees from Lafayette College and New York University . . . served as a second lieutenant during World War I . . . in World War II was in the office of the Quartermaster General . . . appointed deputy director of purchases for the Quartermaster Corps in 1943, held the post for two years . . . has seen much government service . . . in 1933 was chairman of the Industrial Materials Department's Policy Board . . . in 1940 was group executive of the textile section on the staff of Edward R. Stettinius, head of the Industrial Materials Department of the National Defense Advisory Com-



Robert Ten Broeck Stevens

mission . . . in 1941 he was named coordinator of the Office of Production Mobilization's defense contract service in New York City . . . is a member of the executive committee of the Commerce Department's business advisory council . . . is chairman of the board of J. P. Stevens & Co., chairman of the board of directors of the Federal Reserve Bank of New York and a member of the boards of General Electric, General Foods, New York Telephone and many other business firms . . . nominated to succeed Frank Pace, Jr. as Secretary of the Army following legislative consideration and confirmation to the top Army position.

Secretary of the Navy

Robert Bernerd Anderson . . . born at Burleson, Texas, 42 years ago . . . graduated from Wetherford College in 1927 . . . received his law degree from the University of Texas in 1932 . . . began practice in Fort Worth the same year . . . elected to the Texas Legislature that year and later became assistant attorney general of the state . . . professor of law at the University of Texas in 1933 . . . State tax commissioner in 1934 . . . chairman and executive director for the Texas Unemployment Commission in 1936 . . . vice president of the Associated Refineries, Inc., since 1943 . . . a director of the Northwest Broadcasting Co., Inc., since 1934 . . . director and deputy chairman of the board of the Federal Reserve Bank of Dallas, Texas . . . director of the Vernon Times Publishing Company, the Vernon Transit Company, Mid-Continent Oil and Gas Association, and Texas Wesleyan College . . . member of the Texas Bar Association and the Independent Petroleum Association of America . . . attorney for the W. T. Waggoner estate, and its general man-



Robert B. Anderson

ager . . . chairman of the Texas Board of Education . . . has never been to sea on a Navy vessel . . . nominated to succeed Dan A. Kimball as Secretary of the Navy following consideration and confirmation by the Armed Services Committee and the Senate.

Secretary of the Air Force

Harold E. Talbott . . . born at Dayton, Ohio, in 1888 . . . graduated from Yale University in 1910 . . . in World War I he served as a major in the Airplane Service . . . from 1916 to 1920 he was president of the Dayton Wright Airplane Company, and from 1931 to 1932 was chairman of the board of the North American Aviation Company . . . in the period 1942-1943 he served as director of aircraft production of the War Production Board . . . in the field of business he has been in charge of hydroelectric development and industrial construction . . . is a former vice president and general manager of Dayton Metal Products Company and chairman of the board of the Standard Cap and Seal Corporation . . . he has served as chairman of the Finance Committee of the Electric Autolite Corporation and is a director of several other corporations . . . was an original investor in the Chrysler Corporation and is now a director of that firm . . . now president of the investment banking firm of H. E. Talbott & Company of New York City, the post he held at the time of his designation as Secretary of the Air Force . . . is a prominent sports figure, and especially a horseman, having been a ten-goal polo player some years ago . . . likes big game hunting . . . nominated to succeed Thomas K. Finletter as Secretary of the Air Force following Armed Services Committee consideration and Senate confirmation to the top Air Force position.



Harold E. Talbott

"We should not let the politically and geographically restricted war in Korea blind us to the fact that decisive land warfare can hardly escape being continental. We should not let our preoccupation with mass obscure our vision of mobility."

ONE WAY TO LOSE A WAR!

by MAJOR GENERAL ROBERT W. GROW



Regardless of the efficiency of its air support, no ground force can win unless it possesses a fighting ground component of greater mobility than infantry. Airborne troops and tactical air are ideal support units for mobile ground operations.

AIRBORNE infantry, atomic weapons, guided missiles or other nonconventional means may win a war of the future, *but a failure to provide a properly balanced and equipped mobile ground arm is more likely to lose it.*

It is high time that more consideration be given a ground army which is balanced to fight a modern continental war.

History teaches that the most successful commanders employed two main assault elements in battle. The first and usually the larger one was an infantry force, while the second was a cavalry force. Both were supported by artillery, engineers, etc. The purpose of the cavalry force was to enable the commander to quickly seize key terrain, to exploit success, and to carry out wide and rapid maneuver. The need for such a ground force arm was never greater than today. The means to create cavalry forces for modern war

were never more available than today.

Cavalry existed in the past because there was a need for a force which could *fight mounted*; a force which could maintain a higher combat tempo than could be maintained by forces fighting on foot. Through history the word cavalry has come to mean the mobile combat arm, and it is in that sense that the word is used in this article. No one need hesitate to read further from fear that this is a plea to revive the horse. Horses are no more synonymous with cavalry than with artillery. Horses have no place on the modern battlefield.

There is a marked tendency today to confuse *transportability* with *mobility*. In the old days, infantry was sometimes transported on horses, but this didn't make it cavalry. Today infantry may be transported by rail, motor vehicle or aircraft. *But infantry fights on foot!* Combat mobility of a degree higher than that of the foot soldier is achieved by the use of mounts from which soldiers can use their weapons, can close with the enemy under fire. Thus mobility, as the term is used here, refers to movement on the battlefield: the same

means may or may not be used to reach the battlefield.

The fact that the horse has been eliminated from the battlefield has in no sense eliminated the cavalry role. For reasons that are difficult to understand, the name "cavalry" was abandoned with the passing of the horse, and the word "armor" was substituted. Unfortunately, it is not an accurate substitution; it has caused much misunderstanding and may do irreparable harm. "Armor" does not signify a role in battle. It does not apply to a single arm. Everyone needs armor today; even the foot soldier wears it.

Another misconception is that tanks and armor are synonymous. Branches of the service are determined by their role in battle. That there is a mounted combat role, none can deny. To carry out that role was the task of the Arm known as Cavalry, and is the task of the Arm known as Armor. But tanks are weapons needed by both Armor and Infantry.

Tanks are highly mobile, armored supporting weapons, needed for the support of both Infantry and Armor.

MAJOR GENERAL ROBERT W. GROW has just retired following a career of service in the mobile field, including early years in Cavalry and an association with armor dating from its formative years through its peak in World War II, when he commanded the 6th Armored Division.



Fairchild



U.S. Army

There's a tendency to confuse transportability with mobility. Airborne troops and trucked infantry are transported, not mounted. Armored infantrymen must be equipped with vehicles designed for mounted fighting as well as for transport.

*"The side which produces mobile-minded leaders
who develop armies balanced between mounted and dismounted elements . . .*



Press Association

German appreciation of mobility in battlefield employment brought her decisive victories on all fronts in World War II.

The same tank might do both jobs, but in one case it is supporting the action of the foot soldier at infantry tempo, while in the other case it is supporting the action of the mounted soldier at cavalry tempo.

Suppose tanks are used to lead an attack. If the attack is made by Infantry, the tanks can go only as far and as fast as the foot soldier can accompany them; the fact that the tanks make short bursts of speed, then wait for the foot soldier, does not alter the picture. If the attack is made by Armor, the tanks can go as far and as fast as the mounted soldier can accompany them. Herein lies the fundamental difference.

Another misnomer has crept in to confuse the mobile picture—"armored infantry." The name is misleading in that it implies that the soldiers fight only on foot.

Our "armored infantrymen" must become, in effect, our cavalymen, mounted on a vehicle which permits them to fight mounted, as well as retaining for them the ability of our

horse cavalymen to dismount and fight on foot should the occasion arise (something which our tankers are not in a position to do). Herein lies the basis of our modern cavalry—a mechanical mount from which the soldier can fight, from which he can dismount to fight on foot, and which permits him to switch rapidly from one method to the other in combat.

In this respect we must not let a complete preoccupation with tanks compromise our development of ever more suitable mechanical mounts. From the crude beginnings prior to World War II, our mounts have reached a stage that gives promise of meeting the demands of mounted combat. If design does not veer too strongly in the direction of "complete" protection, if we have a design permitting personnel to effectively employ weapons while mounted, and if there be agility and speed and the numbers required, we will restore mounted combat. The history of several of our armored divisions in World War II provides many exam-

ples of modern cavalry. Such cavalry, the same as infantry, requires tank support; in fact, its requirement in this respect is even greater than infantry's.

To permit the American army to fall into a pattern cut to fit certain restricted areas in the Pacific is to court disaster. It is not necessary to revive the name "cavalry" if, as seems to be the case, this is anathema to many, but it is of the highest importance to be prepared to carry out the cavalry role. There is need for increased mobility of mind to sense this problem. On the continent of Europe, Asia or Africa, no ground force, regardless of the efficiency of its air support, can win unless it possesses a fighting ground component of greater mobility than Infantry. Employing our current terminology this component should be composed of armored divisions organized into one or more armored armies. Successful though they were in the European campaigns of 1944-45, our armored divisions were not employed in a mass that

...and, on the battlefield, effect a balanced

use of mass and mobility, will win the land battles of the next war."



American mobility was not massed, requiring static fronts and masses of infantry with sheer weight producing victories. U.S. Army

would likely have been decisive in 1944. For one thing, they were not properly organized or equipped. There were too many tanks and not enough "armored infantry" so that the armored divisions were closely anchored to the infantry divisions. The mount for the armored infantryman wasn't good enough, either in mobility or fire power. Improvements have been made and more are due to come. As of this date we have a pretty well balanced division that can fight mounted or dismounted, that can perform the cavalry role in battle, that can outfight a greatly "superior" Soviet force in any continental theater.

We should not let the "tank-infantry" slogans and tactics lead us to forget the "tank-cavalry" team, the mounted combat team. We should not let the politically and geographically restricted war in Korea blind us to the fact that decisive land warfare can hardly escape being continental. We should not let our preoccupation with mass obscure our vision of mobility.

World War I became a military stalemate when mobility was lost. World War II saw a revival of mobility, but only in part, because the substitution of the iron horse for his four-footed predecessor was far from perfect and because too many commanders thought the role of Cavalry had passed.

The side which produces mobile-minded leaders who develop armies properly balanced between mounted and dismounted elements and, on the battlefield, effect a balanced use of mass and mobility will win the land battles of the next war. It requires no super-imagination to see that cooperation with air power—including air-transported infantry—demands self-contained, balanced mounted combat units. No country is as capable as ours of providing such units.

Mobility begins in the mind. Leaders must think mounted. There are plenty of mobile minds in America.

The item of cost, even if it were important, need frighten no one. It does not require a vast increase in

quarter-million-dollar tanks. It does require a large output of iron horses for mounted soldiers; relatively small, relatively cheap (compared with tanks), highly fast and agile vehicles capable of carrying a squad of soldiers delivering a sheet of fire, teamed with tanks, artillery and engineers equally well mounted, in units that can fight mounted, dismounted, or both.

There is nothing new in the idea. There is nothing new in the equipment—except that it can be improved. But there is something alarmingly new in the current trend of thought, which is dangerously backwards; backwards toward trenches, stalemates, immobile human masses, immobile minds and the defensive; *one way to lose a war!* Let us balance the American Army, at least one armored division in three with double the ratio in Europe where other nations can better furnish infantry divisions. Let us revive the mobility of mind which will create and can employ an American Army in which mass and mobility are balanced.



Not many weeks ago readers on the home front were being thrilled by the report of a hot action on the Korean battle front involving a small group of tankers. Here is that incident phased into its overall operation, the whole a story of what armor can accomplish in mountain operations under present tactical conditions.

by **FIRST LIEUTENANT CLARK C. MUNROE**

1,200 Reds Fail To Stop 3 Tanks In Night Fight
2 G.I.s Die, but Rest Escape Trap After Beating Back Foe Swarming on Vehicles
 EASTERN FRONT, KOREA.
 (P). — Twelve hundred savage, burp-gunning North Koreans surrounded three American tanks for fifteen hours on a fog-shrouded peak on the eastern front. Two members of the tank crews were killed, but all the others reached safety in one of the

Armor Holds the Hills

THE war in Korea has been called many things. It is an infantryman's war; it is an engineer's war; it is a different kind of war to different people. But this much is certain, it has never been called a tanker's war. Be that as it may, however, when the story is finally written, many a shining chapter will owe much of its brilliance to the actions of the men in the iron monsters.

A typical action took place in September of 1952 on Hills 854 and 812 in Eastern Korea. The terrain was anything but ideal from the tanker's viewpoint, for as it stretched before the eyes of the men from the 245th Tank Battalion they could see only steep, rocky mountains and occasional corkscrew-like dusty roads, while off to the north as far as the eye could see were only more purplish peaks which lay in North Korean hands.

The fight which took place here and which will not soon be forgotten by those who played a part in it began early in the evening of September 21, 1952. Company C of the 245th Tank Battalion was adding the firepower of its guns to that of a Republic of Korea (ROK) Division in position on the MLR. Two tank platoons originally were emplaced on the line while the uncommitted portion of the company was slightly to the rear, ready to move into support should the need arise. The ten tanks of the two platoons were dispersed as shown on the map in Positions 1, 2, 3, and 5 and later were reinforced when Position 4 was occupied.

Radio silence was in effect on each position but all of the tanks were tied in by wire. Because of the extremely rugged landscape, it was impossible for the positions to be mutually supporting, but every effort was made to have the tanks on the individual positions placed so as to be able to cover one another with fire. Captain John Salco's command was ready for whatever the future might hold.

The North Korean troops had been showing increasing interest in Hills 854 and 812 during the days preceding September 21st. Thus, when enemy probes were reported in the vicinity of Position 2 early in the evening of the 21st, there was no unusual excitement, although everyone was alerted for action.

During the early hours of darkness, enemy artillery let loose extremely heavy volumes of fire on both hills, and simultaneously, reports of an enemy company-size attack on Hill 812 between Positions 1 and 2 were received at the tank company headquarters. After less than half an hour of the enemy shelling the wire communications to Positions 2 and 5 had been destroyed, and by 0230 hours the phones were out from the company CP to all the firing positions. Radio silence was lifted when the phones went out and it was determined that two enemy battalions were swarming onto the Hill 854 terrain complex after an initial diversionary assault on Hill 812. Friendly artillery roared down on the attackers from above while fire from the well-

FIRST LIEUTENANT CLARK C. MUNROE, Armor, commanded a tank platoon in the 72d Tank Battalion in Korea, in 1950-51, is now aide to Lt. Gen. I. D. White, CG of X Corps.

emplaced tanks added to the devastation.

Initial information was slim, primarily due to two factors—disruption of the wire communications, and the natural difficulty arising from the language differences between the tankers and the South Korean troops whom they were supporting. However, Captain Salco alerted his uncommitted tanks and the commander of the 245th Tank Battalion, Lt. Col. Charles W. Walson, ordered Company A to prepare for possible employment in Company C's sector.

The full story, however, is best described by taking each firing position in turn and telling of its part in the fast-developing action.

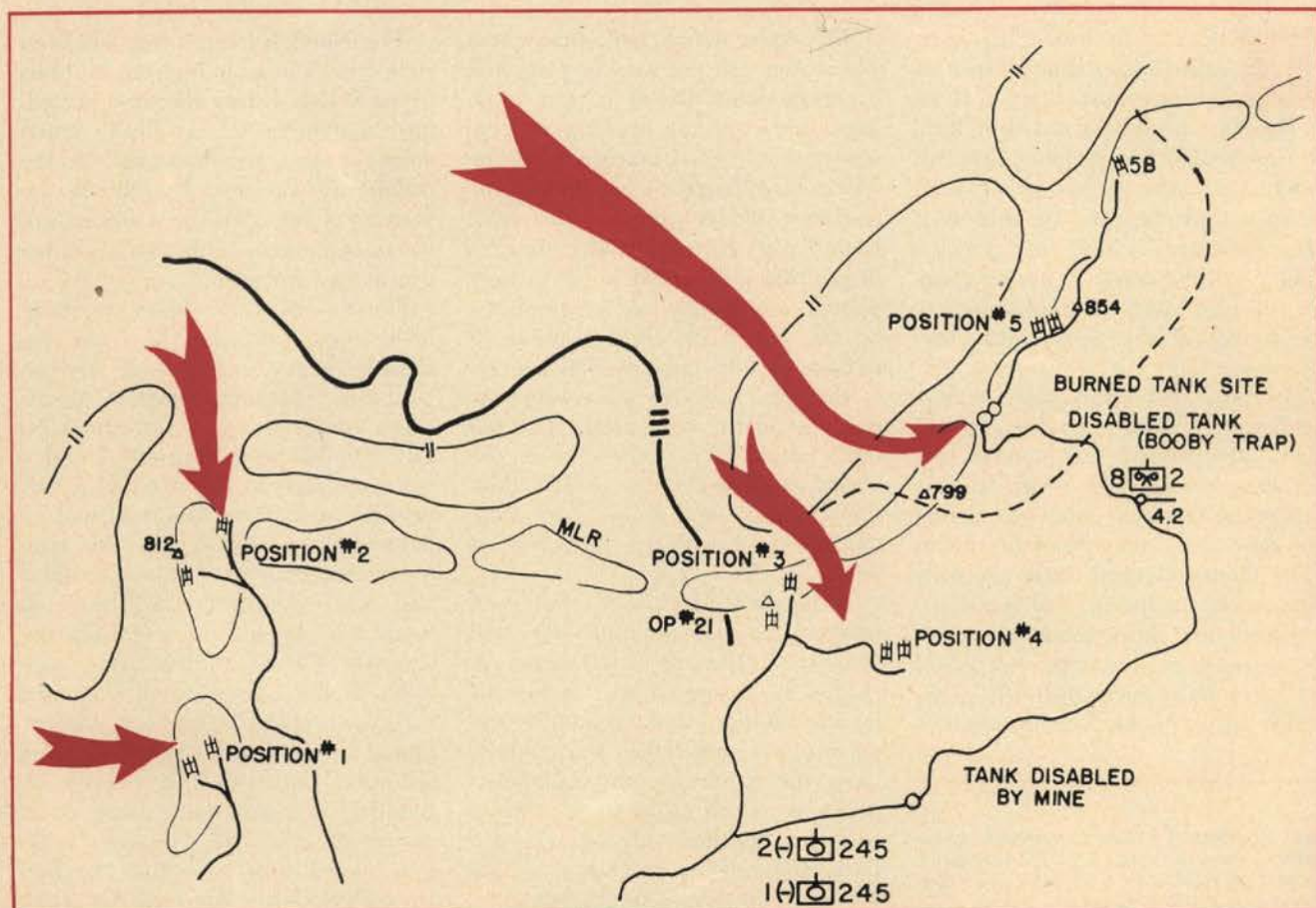
Position 1 near Hill 812 was the lightest hit of the four original positions. It was manned by two tanks from Lt. Malcolm E. Givens' platoon and came in for its share of the heavy shelling which preceded the attack. Friendly infantry forces were hit early in the evening by two enemy platoons, but except for infiltrations the North Koreans failed to breach the MLR at this point.

Position 2, occupied by the two tanks making up the remainder of Lt. Givens' platoon, was not so fortunate. At the time of the attack, both Lt. Givens and the company executive officer, Lt. Patrick H. Lynch, were at Position 2. North Korean artillery started to fall on their location at 1800 hours on September 21st. It was followed by an infantry attack and by 2100 hours the enemy had reached the crest of Hill 812. Friendly searchlights, which had been furnishing artificial moonlight, had been turned off, and in the pitch blackness it was impossible to tell friend or foe. Heavy small arms fire pierced the blackness from close at hand on all sides. The two lieutenants knew there was an artillery forward observer in a nearby bunker so they dismounted to move forward on foot to contact him and determine the situation so as better to employ the fire of their tanks.

They inched forward a short distance when suddenly a burst of machine gun fire from close by raked over the two officers, seriously wounding both of them in the legs. They

both fell and neither could walk. The enemy fire continued to kick up a shower of dirt near them and hand grenades came lobbing into the meager cover into which they had rolled. Both Lieutenants Lynch and Givens picked up grenades falling within their cover and tossed them back at the North Koreans. Finally, Lt. Lynch, although painfully wounded, succeeded in crawling through the fire to the friendly bunker to get aid for Lt. Givens. Two friendly infantrymen from the 279th Infantry Regiment, which was in position adjacent to the ROK unit, left cover immediately to get Lt. Givens but in the hail of fire one was killed and the second wounded. Two other infantrymen from the 279th made a second attempt to rescue Givens and were successful in bringing him into their bunker.

Friendly artillery with VT fuze was called onto Position 2 at 0100 hours and the fighting continued without letup at hand grenade range. Friendly infantry in the bunkers and the nearby tanks fired on one another's positions throughout the night



to keep the enemy clear. Finally, at daybreak, the North Koreans pulled back into nearby trenches where they were subjected to the pounding of the tank fire and infantry support weapons. A ROK soldier, after attracting the attention of the tank nearest to him, began pinpointing enemy positions by tracer fire from his rifle and the tank took up the cue and unloaded 76mm shells into the shelter of the enemy. One position fired on in this manner resulted in a confirmed kill of 37 enemy soldiers.

As dawn broke on September 22nd, three tanks commanded by Master Sergeant Homer E. Coen began moving up to reinforce the troops on 812. An armored personnel carrier (APC) attempting to follow the tanks onto the position to recover 25 to 30 wounded men was forced to withdraw as the enemy showered the area with mortar fire. However, Lt. Paul A. Hilty of Company A, which had moved up to support Company C, volunteered to go forward again in the APC and he succeeded in making two trips during which he evacuated all of the wounded. As the reinforcing tanks moved up, a company of North Koreans regrouping for a renewed attack withdrew, and contact was then broken except for sniper fire. Sergeant Coen remained on the position all day both securing it with his fire and acting as a radio relay station for tanks on Positions 1, 2 and 5. Hill 812 was secure.

Position 3 southwest of Hill 854 was occupied by two tanks under command of Master Sergeant Zack S. Gregg. It too came under enemy artillery and mortar fire during the early evening of September 21st, followed by several probes which were repulsed. Another fire fight flared briefly at 2115 hours and then at 2130 hours the Communist troops threw in the heaviest concentration of fire ever received on Position 3. This was followed closely by another infantry assault which forced the ROK soldiers to pull back. Sergeant Gregg contacted Captain Salco by radio and was ordered to position his tanks for mutual support and stand fast.

Radio contact from Position 3 was lost soon after the exchange of messages between Sergeant Gregg and Captain Salco, because in the heavy firing the antennae on both of Sergeant Gregg's tanks were destroyed.

The fighting continued to rage but with the help of the few ROK's still on the position and by moving into previously selected secondary positions the tanks were able to secure their ground against the repeated enemy attacks. Toward morning, the tankers were joined by United States personnel from a nearby observation post which had been overrun. According to the OP party, the MLR between Positions 3 and 4 had been penetrated by the enemy. However, Sgt. Gregg, who still had not regained any communications with his headquarters, remained in position and carried on the fight which raged to within ten yards of the tank positions.

The Koch Incident

Position 5, commanded by Lt. David C. Koch, underwent what was probably the heaviest fighting of the period, as it was there the enemy made his main effort. Sitting as they were atop the primary enemy objective, Hill 854, the tanks on Position 5 could dominate the entire surrounding area with their fire. The action began there at 2030 hours on September 21st with a series of small probes which were repulsed by 2145.

At 2400 hours, an enemy company was observed coming toward Hill 854 from the slopes of Hill 799. The two tanks on the left of 854 opened fire with their machine guns as enemy artillery and mortar fire began to fall in ever-increasing volume. Two of the tank crewmen were wounded by the incoming fire and both tanks were required to button up for protection. The enemy continued to close on the positions, absorbing punishing casualties but moving in until they had infiltrated the tank positions.

North Korean troops crawled up onto the tanks, blocking the vision devices, exploding shaped charges and attempting to jam the 76mm gun tubes and plug the .30 caliber coaxial machine guns in an effort to silence the fire from the tanks. The tankers fired on one another, traversing their turrets to knock enemy troops from the decks. The fighting raged all night as the enemy reinforced his assault force to battalion size. Daylight on the 22nd revealed North Koreans all around the tank positions and in control of the hilltop. Friendly

infantrymen had been forced off the crest, but the tanks held their ground. One Red soldier was observed firing the .50 caliber machine gun from the top of one of the tanks. He was shot off by friendly fire.

The third tank on Position 5, commanded by Sgt. Eugene J. Gregor, was situated about 1,000 yards north of the other two tanks and was also in serious trouble. An enemy battalion had surrounded the area and the incoming artillery had forced that tank also to button up. The narrow ledge upon which the tank was sitting, weakened by heavy rains, began to crumble. The tank commander, whose radio contact also was lost because of a destroyed antennae, could see nothing but North Korean troops when he cracked his turret hatch. He ordered the driver to pull down the hill to the position of the other two tanks. Although the road was extremely narrow, with a sheer drop on one side, the driver managed successfully to maneuver the tank down near the area where the other tanks were. However, the tank commander could see nothing but enemy troops so he continued down to the bottom of the hill where he joined Lt. Barney H. Kengla's platoon from Company A which was preparing to relieve Lt. Koch's tanks on Position 5.

Meanwhile, Lt. Koch had observed Sgt. Gregor's tank fighting its way down the enemy-held hill. By this time his own position was devoid of friendly infantry and had become untenable. He ordered his driver to prepare to follow the first tank down the hill. Backing up so as to bump the other tank as a signal, Lt. Koch started the descent on the narrow trail, taking under fire the North Korean troops attempting to consolidate their hold on the hill. The second tank also began to move down the hill but its clutch failed to function on the steep slope and it was forced to halt.

Lt. Koch's tank had gone about 300 yards when it was hit by an enemy bazooka shell. It burst into flame which the fixed fire extinguishers failed to quench. Lt. Koch ordered his crew to abandon the tank, and amidst a hail of enemy fire they made their way to a bend in the road where an overhanging bank offered temporary protection. North Koreans directly above the unprotected tank-

ers opened fire and although the angle of the bank gave momentary cover, Lt. Koch realized his crew must be gotten quickly to safety. The only escape was to jump over the cliff formed by the road on the far side from where they were huddled. Explaining the maneuver, Lt. Koch then made the first break and his crew followed, throwing themselves over the ledge. Everyone cleared the road, but one crewman broke his leg in the fall. Lt. Koch and one of his men carried the injured man along while the remainder of the crew moved out of immediate danger. Enemy mortar and small arms fire peppered the three tankers, but they were able to make their way 600 feet down the steep slope where they were met by ROK infantrymen forming for a counterattack on the hill.

The Payoff

Back at the tank immobilized with the bad clutch, the situation grew steadily worse. It was desperately engaged with the North Koreans when a bazooka round penetrated the turret, killing the tank commander. A medic who was in the tank opened the hatch but was killed by a burst from a burp gun. Several North Korean hand grenades then were lobbed into the open hatch but the remaining crew members managed to throw them out before they exploded and then succeeded in securing the hatch. The Reds fired several machine gun bursts at the hole caused by the bazooka, while inside the tank a crewman attempted to hold a helmet over the hole to stem the fire.

The gunner attempted to get clear of the trapped tank but was blown to the ground as soon as he was out. North Korean troops stabbed him with a bayonet, dragged him toward the tank and, after taking his pistol, left him for dead. However, the gunner managed in spite of painful wounds to roll under the tank where he remained unseen until several hours later.

Down at the base of the hill, Lt. Kengla's platoon, joined by Sgt. Gregor's tank, the only uncommitted portion of Company C, was preparing to move out to relieve Lt. Koch's battered force. A counterattack was to be executed by the ROK Army elements simultaneously with the relief effort by the platoon from Com-

pany C, but Captain Salco's communications with the ROK force were out so he ordered Lt. Kengla to proceed independently to Position 5.

Lt. Kengla moved out, and as his lead tanks approached the positions of the 4.2 mortars he observed the mortar men engaged in a fire fight with North Korean troops who had fought their way into the rear. Adding the fire of the tanks to the fight proved to be the turning point and the Reds withdrew while the tanks moved on up the slope.

Moving by bounds where the terrain permitted, the first section tanks came upon Lt. Koch's burned out tank, which was blocking the trail. Two members of the leading crew dismounted and made their way to the tank where they determined that no wounded were aboard. As the two men attempted to return to their own tank they were caught in a burst of enemy fire and wounded. The remainder of the crew of the blocked lead tank dismounted to give aid but in face of heavy fire they were forced to seek cover, taking the wounded with them. Continued enemy fire prevented their returning to their own tank, so all except one made their way to the rear tank in the column. The remaining man who had also been wounded managed to crawl into a ditch where he remained under cover for eight hours until rescued.

The second section of Lt. Kengla's platoon by this time had also started up the road near the 4.2 mortar positions when the lead tank struck a mine. The following tank successfully covered the disabled tank and prevented the North Koreans from making a direct assault upon it.

Lt. Kengla's tank, with the one remaining first section tank, alternately moved and fired on Hill 854, gradually working its way forward. When Lt. Kengla reached the unmanned first section tank blocking the trail he dismounted and climbed into the driver's compartment to move the tank clear of the route of advance. However, he noticed crude booby traps fashioned from hand grenades attached to the laterals and clutch. A ROK sergeant, part of the counterattacking force which was now moving up, climbed into the tank, disarmed the grenades and handed them to Lt. Kengla who

tossed them over the cliff by the side of the road. This accomplished, the ammunition from the unmanned tank was transferred into Lt. Kengla's tank and after the section had succeeded in shoving the burned tank off the cliff, Lt. Kengla continued his movement up the hill.

As the advance of the first section continued, it came upon the tank which had been forced to halt because of the faulty clutch. It was still in action but it was imperative the wounded be removed for treatment. Lt. Kengla had them placed on the back of his own tank and sent to the company assembly area, for he had learned that a relief force of three tanks commanded by Lt. Braxton K. Collins of Company A was also on its way to Position 5. When the three new tanks arrived, Lt. Kengla oriented Lt. Collins on the situation and then, acting on orders, made his way back to the company assembly area leaving Lt. Collins in command.

Position 4 now entered the picture, for it was from that point that Lt. William J. Beckwith commenced his fire support of the ROK counterattack. It was now 1600 of the 22nd. Lt. Beckwith's mission was to advance from Position 4 to Hill 854 but after several attempts were made it was certain that the terrain was such that the tanks would be unable to make the ascent from their location. At 1610 hours it was reported that Hill 854 had been secured by the ROK troops, so Lt. Beckwith organized his force on Position 4 so as to be able to repel by fire any possible enemy counterattack on 854.

Staying Power!

The expected counterattack failed to materialize and the fight for 854 was over. It had been a violent action on both 854 and 812, although it lasted less than 24 hours. The tanks of Company C, supported by those of Company A, had given an excellent account of themselves and, though operating in terrain which seriously limited their maneuverability, they were able to provide vital fire power and "staying" power when and where it was most needed. Their aggressive employment both in the defense of the position and in the later counterattack proved to be a major factor contributing to the success of the operation.

*John Ziska was not in league with the devil.
He was nothing more—nor less—than a medieval Patton,
spawning the tactical ancestor of today's tank
and dishing out an advance portion of Hell on Wheels.*

The Tanks of the Middle Ages

by LYNN MONTROSS

SEVENTY years before Columbus discovered America, the tactical ancestor of today's tank made its appearance on the battlefield. It is hardly needful to add that this product of the Middle Ages could only seem quaint and primitive to a modern generation. But the concept of an armored vehicle with firepower was terrific in the year 1422, and even a present-day M46 might envy the Hussite wagon-fort its long string of victories.

Throughout military history, of course, the wagon has played a persistent part in defensive tactics. The Goths of the ancient world fought behind a barricade of wagons, just as American pioneers saved their front hair from the redskins sixteen centuries later by forming their prairie schooners into a tight perimeter. But the wagon-fort of the Hussites was something different and special. It was actually a horse-drawn armored car, co-ordinated with other arms and used for offense as well as defense. It was trying to be a tank to the best of its ability, and it raised so much hell with opposing forces that its battlefield victims accused the Hussites of being in league with the devil.

The Armor of Antiquity

Even in the Middle Ages the idea of armor was not new. For the chariot of the ancient world may be dated back to the beginnings of recorded history in Mesopotamia. A two-wheeled cart, low in the stern and rising to a curved prow covered with bronze plates, this horse-drawn vehicle provided both protection and mobility. The bone-crushing tactics of Assyria depended to a large extent on the armor of antiquity, and it was likewise a reliance of Persia when that empire fought it out with Greece for supremacy.

Chariots being better suited to plains than mountainous peninsulas, it is not remarkable that they had a very minor part in Greek and Roman tactics. And in the decisive battle between East and West, chariots failed to save Darius III from a fatal defeat at the hands of Alexander the Great.

The Persian potentate had already taken a beating from the Greek invaders in a preliminary test of strength along the eastern Mediterranean littoral. After placing a force in Alexander's rear, compelling him to fight to regain his line of communications, Darius allowed himself to be drawn into a narrow coastal plain between the hills and the sea. There his chariots and cavalry were too cramped for space to be effective, and the Per-

sians bowed to defeat on the field of Issus in 333 B.C.

Two years later Darius tried to avoid the basic error of that reverse by awaiting his adversary on a broad plain near the river Tigris that offered unlimited elbowroom. After clearing away all obstructions until the terrain was as level as a parade ground, the king of kings drew up a host estimated with the usual Oriental hyperbole at half a million men. He placed his cavalry on both wings and his masses of foot in the center, according to standard procedure. But at the battle of Arbela he wooed victory with an advance line of chariots armed with stout scythes protruding from both sides. These armored vehicles were to charge, covered by a "barrage" of arrows, while the Persian cavalry closed in for a double envelopment.

The 7,000 horse and 40,000 foot of Alexander's army were probably outweighed at least four to one. But he did not hesitate to seize the initiative after placing his phalanx of spearmen in the center and the cavalry on both wings, with hinges of light infantry between the two arms. His right, followed in echelon by the rest of the force, struck a surprise blow at the enemy's left before Darius could set his ponderous machine in motion. The Persians made a corresponding shift to meet this oblique attack, but the invaders were already

LYNN MONTROSS, author of *War Through the Ages*, *The Reluctant Rebels*, and *Rag Tag and Bobtail*, is historian with the United States Marine Corps.

in position to pour arrows and javelins into the flank of the chariots when they advanced. Enough drivers were killed and horses wounded so that the charge got out of control, with the scythes doing more hurt to friend than foe in the melee.

Alexander took advantage of the confusion to drive a wedge with his cavalry between the opposing left and center, cutting the Persian army in two. The flight of Darius and his nobles led to a general panic, ending in the collapse of an army still retaining a great numerical superiority. The victors sacked the Persian Empire from end to end after making a captive of a ruler who had learned, belatedly, that badly handled armor may be worse than no armor at all.

A Neat Perimeter

Six centuries later, wheeled vehicles were to affect the outcome of another decisive battle resulting in the downfall of a greater empire. The grandeur that was Rome had become sadly tarnished by 378 A. D., when waves of land-hungry barbarians beat against the northern and eastern frontiers. The legion of the glorious past had been largely replaced by mercenary cavalry, and long-distance attack by war engines had more appeal to Roman warriors than the shock of infantry attack. Even so, the Emperor Valens anticipated an easy victory when he set out to subdue the Visigoths who had found lodgment across the Danube in Roman territory. He attacked on a plain near Adrianople when the cavalry of the barbarians was absent on a foraging expedition. The Gothic foot took refuge behind a barricade of wagons, which sheltered them from the Roman missile "preparation" as Valens advanced with his infantry in the center and his horse on both wings.

Victory was far from the thoughts of barbarians who hoped only to gain time until their own cavalry could return. But the wagon barricade proved to be the decisive factor when it stopped the Roman cavalry and threw it into disorder. The Gothic foot took heart and came out fighting just as their own horse appeared "like a thunderbolt" on the Roman left flank. A flight of the cavalry on the Roman right left the rest of the army huddled into a mass too dense for the infantry to use their weapons.

And in the ensuing massacre, Valens perished along with two-thirds of his army.

Rome never recovered from the disaster. Emperor Theodosius, the successor of Valens, managed to postpone the death agony for a generation by hiring defenders from among the hosts of the barbarian invaders themselves. But this desperate expedient could not save an empire that had already dashed itself to pieces against the wagon barricade of Adrianople.

The lessons of this battle and Arbela were known in the Middle Ages, when educated men groped back to the classical past for guidance. But it is not likely that such precepts had any influence on the Bohemian peasants who developed the armored vehicle with the best historical claim to the ancestry of today's tank. For the fanatical followers of John Huss sought their inspiration from the Old Testament rather than the classics, and they found their earliest weapons among such familiar agricultural tools as forks and flails.

The first premature blows of the Reformation were struck in 1419, four years after Huss died at the stake. His Bohemian disciples not only rejected most of the doctrines of the Roman Church; they also revolted against the large landowners at a time when the clergy owned two-thirds of the soil. A powerful ferment was brewing in the ancient land of Bohemia, and the germs of civil war were present in the political and religious differences of the Hussites themselves.

A Military Genius

In 1420 a crusade of all Christendom was proclaimed against the heretics by Pope Martin V. The first army of invasion was led by Sigismund, king of Bohemia and Hungary as well as Holy Roman Emperor. Meanwhile, the moderately radical faction of Hussites, made up chiefly of peasants, had found a leader in John Zizka. A petty noble of Prague, he had distinguished himself so little that not much is known about his past save that he had lost an eye in a civil war battle and participated in the Polish victory over the Teutonic Knights on the field of Tannenberg in 1410. Even Zizka's age is in question, but he was probably 44 at the outset of his Hussite career in 1420,

though some accounts represent him as being a sexagenarian. At any rate, the first great military genius of the Age of Gunpowder had emerged.

The effects were not immediately evident. Zizka held Prague in the summer of 1420 against an inarticulate feudal host led by Sigismund, but the successful defense did not owe to unusual tactics. The 9,000 Hussite warriors, entrenched outside the city on a palisaded height known to this day as Zizka's Hill, beat off all attacks by dint of courage and hard fighting. Even the women took part as ammunition carriers, and weapons of gunpowder played little part as compared to pikes, arrows and crossbow bolts. Dissension among the crusaders aided the Hussites, for the invading army fell apart without making a united effort.

Tactics Department

Some of Zizka's men still had no better arms than forks and flails when he withdrew to a stronghold given the Biblical name of Tabor and located about five days' march south of Prague. In this remote hill town Zizka founded the arsenal and tactical laboratory of the Hussite Wars, and his followers were soon known as Taborites to distinguish them from opposing Hussite factions.

Bombards, handguns and other weapons of gunpowder had been known in Europe for a century, but their effect on tactics had not been spectacular. The Feudal Age had taken some hard knocks, it is true, but these blows had been dealt by weapons or formations reminiscent of the classical past—the arrows of the English longbowmen which cut down the French knights at Crècy, and the hedge of spears wielded by the Swiss phalanx which defeated the Austrian men-at-arms at Laupen.

Only in siegecraft had the crude cannon of the day spoken with some authority. Europe was dotted with the stone castles of ironclad lords preying upon commerce. Ransom and robbery were a flourishing business for these feudal barons until gunpowder provided the means of battering down their walls. Even so, the armies of the age proved more than ordinarily resistant to change, and the early cannoneers considered themselves craftsmen of a secret guild rather than soldiers. These specialists

and their bombards could be hired by anyone willing to pay the fee, and sieges offered more profits and fewer risks than battle. Foundries sprang up for the manufacture of cannon, and every large town soon had its ammunition quarry for the production of stone balls. But mechanical progress lagged to such an extent that the bombards of 1420 were still mounted on clumsy wooden sledges, their muzzles being elevated or depressed for range. The handgun was merely an iron tube clamped to a straight stock and fired by applying a smoldering cord to the touchhole.

These limitations explain why tactics had been so little influenced by a century of gunpowder, even though a few handguns had appeared at Crècy as early as 1346. The defensive was still all-powerful, allowing for rule-proving exceptions, and there was no infantry worthy of the name. Medieval armies went into action with the heavy cavalry on both wings and a center composed of the masses of untrained serfs fighting on foot. The ironclad men-at-arms came together in splintering collision, then slugged it out with lance and sword in hundreds of single combats. Unhorsing an opponent and holding him for ransom was the prime object, and battles sometimes ended with a wing of each army prevailing. Nobody troubled to count the casualties of the miserable drudges fighting on foot, though the losers often perished by the thousands in a happy massacre.

Human Dreadnaughts

Knightly cerebral processes were not notably keen, and little had been learned from the lessons taught by the Swiss spearmen and English long-bowmen. As for gunpowder, the only reaction of Europe's masters had been to build thicker stone walls and encase themselves in heavier armor. By the early fifteenth century this trend had gone so far that a fully-armed knight in plate-armor panoply weighed between 300 and 400 pounds. Special breeds of horses were reared in Flanders to carry the human dreadnaughts, their descendants having come down to us as Belgian or Percheron draft animals.

These were the adversaries with whom John Zizka had to deal when he withdrew to Tabor to organize, arm and train the first coherent army

of the Age of Gunpowder. It did not require a man of genius to perceive that the armored knight on the barded horse had become an anachronism. But Zizka must also have recognized that the thundering charge of the men-at-arms was still a fearful and unnerving thing for the unmounted serfs awaiting the impact. Even if you armed some of your serfs with handguns, they could only hope to put a ball through a plate-armor cuirass at very close range. Besides, there was the psychology of the age to be considered, even though that term was not a glib catchword of the year 1420. For generations the serfs of Europe had acknowledged as masters the arrogant lords who held their bodies in bondage. It was difficult to transform this cringing attitude into the confidence of soldiers bidding for victory on the battlefield.

Promotion by Merit

Zizka began the task by imposing a Roman discipline at Tabor without regard to social rank. Battle drill went on tirelessly, and drastic punishments were prescribed for such ancient military vices as tippling, gaming and wenching. Promotion was based upon merit, with Zizka setting the example by declining title, honors or rewards.

Such a stern military system could not tolerate the hordes of camp followers encumbering other medieval armies, and Hussite women, old men and children were trained to dig field fortifications and bring up ammunition. Theory was combined with practice as Zizka sent his troops out on expeditions against the castles and walled monasteries of Bohemia. These forays not only provided combat experience but also gold for the war chest and such much-needed weapons as bombards, handguns and crossbows.

Seventeen months elapsed between the defense of Prague and Sigismund's second crusade late in 1421. The invading force, estimated at 200,000 and probably numbering half as many, was made up of Austrian, German and Hungarian contingents. Plunder and conquest were doubtless greater incentives than religious zeal, since war-racked Bohemia appeared to be ripe for the plucking. But there was little cohesion and less discipline among men-at-arms from a hundred

petty states of the Holy Roman Empire—that vague political structure described as being "neither holy nor Roman nor yet an empire." About all that Sigismund's polyglot host had to recommend it was human tonnage and the muscular tactics of knight-hood; and its chances for victory might have been likened to those of an over-inflated balloon challenging a blowtorch.

John Zizka had only 15,000 men at most, but he had an army—an army made up of infantry, cavalry, artillery and primitive tanks. Displaying his preference for the strategic offensive combined with the tactical defensive, he marched northward from Tabor in December and took a position calculated to compel an attack.

Sigismund obliged with a headlong advance from the northern frontier and the first clash took place on January 6, 1422, near the town of Kutna Hora, some 40 miles east of Prague. The Taborites were drawn up in a formation that must have puzzled the unsuspecting crusaders. Across the field stretched a line of wagons armored with sheet iron and joined to one another by chains. Each vehicle sheltered several marksmen with handguns or crossbows, and pikemen were posted in the intervals. As a further innovation, Zizka had mounted medium bombards on wheels instead of the usual sledges and placed them along the center, protected by the wagon-forts and pikemen. The Taborite cavalry was on both wings, and a small reserve waited in the rear.

Tactics, Not Sorcery

Unhappily, there are no satisfactory detailed accounts of the ensuing battle. The Hussites, like the Carthaginians of old, left military chronicles pretty much to their enemies, some of whom earnestly believed that Zizka won his victories by sorcery. It is a consolation, however, that all reputable sources dealing with these campaigns have been made the basis of chapters in two of the world's most scholarly works of military history.*

*Sir Charles W. C. Oman: *History of the Art of War in the Middle Ages* (Vol. II), London, 1924. Hans Delbrück: *Geschichte der Kriegskunst im Rahmen der Politischen Geschichte* (Vol. III), Berlin, 1900-1920. The mysterious career of John Zizka has also inspired less authoritative books, including a popular history by George Sand, the French novelist.

WHY NOT USE OUR BEST WAR SKILLS?

The criticism of Garrett Underhill and Ronald Schiller [in a recent article in *Look* magazine] on the shortcomings of the weapons of the American foot soldier only scratch the surface of certain basic errors of the American Army in its attitude toward the utilization of modern weapons.

The American people, accustomed to a prodigious expenditure of industrial might, are bewildered at the inability of their Army to impose a decision on soldiers of an agricultural country with a largely illiterate population. They feel there is something drastically wrong and they are right.

In Korea today two infantry armies face one another with only incidental tank support. The results are practically a duplication of the first three years of World War I, mass slaughter and insignificant gains.

We were not directly involved in

the first three years of that war, and the bloody battles of the Somme, Verdun, Passchaendaele and Ypres are now largely forgotten, but they were the prototypes of the battles now raging at Bunker Hill, the Hook, Heartbreak Ridge, etc.

Despite elaborate artillery preparation, the infantry never could make any significant advances in the face of machine-gun fire. What they did accomplish were massacres and a stalemate exactly as we have in Korea. So ended the infantry as an offensive arm. This was in 1916.

In that war, however, for the first time a spectacular application of the machine age was applied directly to the battlefield in the form of the fighting machine or tank. Despite its crudeness, it was a machine. It was power driven, it had greater firepower, mobility. Above all else it could advance in the face of machine-gun fire, something the infantry never could do. Gen. Ludendorff

in his memoirs pays tribute to the decisive role which the tank played in the closing days of World War I.

Unfortunately, the tank appears to have made a far greater impact on the Germans than it did on the former allied countries. The results were demonstrated in World War II. The tank had now come of age. Its firepower had been increased, the armor thickened, the speed improved. Its qualities, as befits a machine, were constantly improved as technological knowledge increased. The infantry still moved on foot, carried a rifle, bayonet and hand grenade.

These two basic forms of military organization, the armored division and the infantry, met for the first time on a large scale in World War II. The results were classic. The mechanized Panzer divisions of the Germans tore the infantry divisions of Poland, France, Belgium, Holland and Yugoslavia to shreds.

Doctrine was esteemed so much more than tactics in an age of fanaticism that we know all the shades of Hussite religious and political opinion. But we do not know much about the battle of Kutna Hora except that the crusaders shattered in disorder against the Taborite line. Heavy cavalry had no chance against four integrated arms composed of men drilled intensively for the past seventeen months. And Zizka's bombardments, handguns and crossbows had already inflicted grievous losses on the men-at-arms when his cavalry closed in on both flanks to finish the job without pity for captives.

The victor pursued his routed foes more than fifty miles and caught up with them four days later near Nemecy Brod, where they had joined a secondary invading force. There on January 10 the Taborites won another victory, completing the ruin of the crusaders. The broken remnants streamed in wild flight toward the Moravian frontier, harassed all the way by vengeful Hussite peasants.

Sorcery was suspected by the me-

dieval mind when a situation could not be understood, and the Bohemian heretics were believed to be receiving active aid from the devil. There was no other convincing explanation for such one-sided victories against numerical odds, and John Zizka became a sinister figure when his enemies learned that he was now totally blind. An arrow having pierced his one eye during the siege of a castle in 1421, he had depended on the sight of subordinates while making dispositions for the two battles.

Moravia was the next scene of operations as Zizka marched to the aid of sympathizers who had embraced the Hussite creed. Sigismund was represented by a renowned *condottieri* captain, Pipa of Ozora, with an army of 23,000 mercenaries. The Taborites made chaff of this force in a swift campaign of aggression, but meanwhile civil war had broken out in Bohemia.

The Hussite movement was an agrarian and political as well as religious revolt, and in the spring of 1423 Zizka had it out with an army rep-

resenting the kingdom's nobles and large landowners. He defeated them in April on the field of Horic and again in August at Borek. And with the Hussites temporarily united, the blind leader invaded Hungary to punish the nobles of that land for aiding Sigismund.

In this campaign the Taborite military machine was only partly successful. Although Zizka won all his combats with ease, his column was severely harassed by swarms of irregular Hungarian horsemen. Before the objects of the invasion could be accomplished, a new outbreak of civil war drew the Taborites back to Bohemia. They won two more victories over the nobles and landowners in 1424, and in September a peace was concluded between all Hussite factions.

The Pope had been endeavoring meanwhile to raise new crusades, but Zizka's reputation was so formidable that little came of these efforts. The blind leader's dream of Bohemian solidarity seemed realized in the early autumn of 1424, when he led another

The following item appeared in the November 10, 1952 issue of the Los Angeles Times and is reprinted with permission as a matter of interest to Armor personnel.—THE EDITOR.

Even in Russia where the German armies conquered vast areas, but were finally defeated, the mechanized armies of Hitler made so great an impression, that the Soviets built the greatest tank army in the world.

The debacles of the infantry in World War II completely ended its role as a significant factor in modern war. It now had neither offensive nor defensive abilities. It was now completely obsolete.

Unfortunately, this was obviously not the conclusion of the American high command, for it continued to put its faith in the foot soldier. When the Korean war began and only an armor-tipped North Korean army attacked South Korea, Gen. Bradley assured the American people that the South Korean army would give a good account of itself. He thought it was a good army, and it was a good army as infantry armies go.

Unfortunately, it was hit by an

armored force, and it did what all good infantry armies do when hit by a mechanized offensive. It fell apart, and this despite the air superiority which we provided.

Belatedly a tank program has been inaugurated, but it is apparent that there is little faith in mechanized warfare among the top brass of the Army. Why this should be is almost incomprehensible. If ever there was a nation that was suited for machine warfare, it is this country which has outstripped the world in mechanical achievement.

Gen. Patton demonstrated what Americans could do with even inferior tanks. The superiority of the tank stems from the fact that it is a machine tool. As such it is susceptible to constant improvement. Its firepower can be increased, new metals can be employed in its manufacture, automatic controls can be installed. Possibilities are limitless.

Conversely the inferiority of the

infantry lies in the fact that it is really a collection of laborers using hand tools. Hand grenades, rifles, bayonets, rifle butts and fists are pathetic weapons to use in a mortal struggle with the most populous nation on earth.

It is significant that the Chinese cannot dream of fighting our Navy, which is largely technological, or of competing successfully with the Air Force, but find no special difficulty in stopping infantry assaults.

The army must be completely reorganized with the active assistance of scientists, engineers and production executives. It must be brought to the same technological level as the most advanced branches of American industry.

Such an armored technological Army could bring the war to a close against the hordes of Chinese infantry. The time is short and unfortunately the technical gap is closing.

J. MARGOLIN

invasion of Moravia, parts of which were still held by Sigismund. But Zizka died of the plague in October before reaching the frontier, and the Hussites were soon at one another's throats again.

The chronicle of the next decade is a dreary record of Hussite civil war actions varied with successful raids on Sigismund's cities. Legend had it that after Zizka's death, his followers made his skin into a drum to frighten his foes. But this result was accomplished by the tactical system he founded. For Zizka's affliction had resulted in his officers thoroughly learning his methods while he used their eyesight.

A married priest named Prokop the Great succeeded to the Hussite leadership. And though his talents were political rather than military, he won victories which enabled him to wring concessions from the Pope and Emperor. Plunder and conquest soon became the main objects of Hussite warfare as loot-lured Polish and Hungarian mercenaries filled the ranks thinned by Bohemian deaths. Eastern

Europe was helpless as the cities of Austria, Silesia, Saxony, Bavaria and Thuringia were sacked by Hussite forces which met little resistance. Several more crusades were preached against the heretics, but each time the feudal host dissolved without striking a blow.

The end came in 1434 when the bloody civil war battle of Lipany virtually amounted to Bohemian national suicide. Prokop's main army was defeated by a large Hussite force led by one of Zizka's former generals, with both sides bringing wagon-forts and wheeled bombards into action. The kingdom having already been bled white by fourteen years of cruel and incessant warfare, the 18,000 slain of Lipany weakened it beyond recovery. The Hussites themselves had accomplished what their enemies were unable to do, and soon the Pope and Emperor established their domination again.

Military history is the poorer because we do not know more about this tactical system which accounted for victories in fifty battles or com-

bats as well as the capture of some five hundred walled towns, castles and monasteries. Contemporary accounts credit the wagon-forts with complex offensive movements executed at a gallop, but it is doubtful if the heavy armored cars were capable of such maneuvers. Certain it is, however, that they were mobile enough for offense as well as defense, and more than a third of Zizka's foot was eventually armed with handguns.

* * *

His opponents never understood his methods well enough to describe or imitate them intelligently. This is not astonishing when it is considered that a century would pass before another army of the Age of Gunpowder combined infantry, cavalry and artillery on the battlefield, but without reviving the wagon-forts which are the ancestors of today's tanks. Thus the tactical system created by blind John Zizka flamed like a meteor across the sky, spreading terror and confusion, and then vanished into the medieval darkness.

A baker's dozen years ago, under the urgent prompting of Germany's blitzkrieg victories on European battlefields, the United States Army formed its I Armored Corps, a major mobile organization born coincident with the birth of its component parts—the 1st and 2d Armored Divisions—and, indeed, coincident with a belated recognition in this country of the potentialities of mechanization applied to mobile warfare. On that July day in 1940, the persistent dedication of Generals Daniel Van Voorhis, Adna R. Chaffee and Charles L. Scott and a small group of progressive-minded professionals came to realization.

In the following two years the United States Army organized three more armored corps, the II, III and IV; each came into being as the divisions to fill it were activated.

The formation of these projected mobile corps was inspired by a rather limited but enthusiastic American acceptance of the mobile idea. Our delayed acceptance of a mobile concept was perhaps a by-product of the military thinking which followed the conventional lines set down in World War I. The story had a singular parallel in many countries. Even in Germany, where the mobile concept was to pay handsome dividends in the early stages of history's greatest war, the progressives fought the long fight against traditionalism and reaction.

While our recognition of the mobile technique carried us forward to a height of sixteen armored divisions, the refinement of that technique in the larger sense—armored corps—was short-lived. Our entry into the war took the I Armored Corps components overseas piecemeal, cancelling the corps, while a reshuffling and redesignation of divisions and corps by late 1943 had also eliminated the II, III and IV American Armored Corps in favor of the two-to-one combination which was to obtain during the war and which exists today—essentially an infantry corps in which the armored division is hamstrung in its mobility through association with an organization in which it is a support rather than an assault element.

Against this history, any consideration of the armored corps must be based on German and Russian experience. Our comparatively short period of corps organization was involved primarily with the training of its components rather than with the operation of the whole. But it is significant that General Willis D. Crittenberger, commander of our III Armored Corps during its entire existence, in a recent address at the Armored Center stressed our need for armored corps today.

The starting point for any consideration of a mobile armored corps is the mind—the *mobile mind*. Mobility of the mind is the primary condition to mobile warfare, and it requires no dialectics to establish that fact. Thinking "mounted" cuts across the entire question, applying equally to planning, command, and execution. The tributes which history accords the Fullers and Chaffees and the Guderians and Pattons, are tributes to the mobile mind. Such men possessed it! But they were few. They are few today.

The mission of an armored corps is something to be determined before its organization. Obviously that mission, in the broad sense, is mobile warfare. It embraces aggressiveness, the offensive, speed, surprise, large results, real decision! A corps such as this should be complete and self-sustaining, a team of balance capable of strategic as well as tactical operation, its field of action by definition well beyond the visible horizon. Guderian set the theme in 1940 when he gave his panzer corps the Channel Coast as a goal. Hitler tagged it in his Operation Barbarossa directive with the general intention of destroying the Western Russian Army by "bold operations involving deep penetrations by armored spearheads." The record need not be labored.

In the matter of organization, the Germans, in the crescendo of operations that took them from Austria to Czechoslovakia, Poland, the West, the East, the Balkans and North Africa, were able to test, improve and prove the panzer technique. The French and British forces, holding to the theory of parcelling out their armor to infantry, were no match for concentrated armor supported by motorized infantry. Thus the German massing of means, with forward command and air support, carried the field in a large way.

The Russians were not long in learning the lesson from the Germans. At a time when the United States Army was eliminating its four armored corps, the Russians were using their 3d Tank Army (a Russian tank army was their equivalent to an armored corps, is now their mechanized army) to attack the German Rzhev-Suchevsk sector, succeeding where two infantry armies had failed. Really decisive use of the tank army was made at Stalingrad in 1942 when several of them broke through to effect a broad double envelopment of Von Paulus' Sixth German Army.

In the summer of 1943 at Kursk, which the Russians consider the turning point of the war, the outcome hinged upon whether the Germans

... AN ARMORED CORPS

or Russians committed and exhausted their armored corps first. The Russians came out on top. Their 5th Tank Army effort to cut off the Germans at Kharkov failed only because of the arrival of German armor and a series of violent tank battles.

January of 1944 saw a classic double envelopment by two tank armies, doing terrible damage to German forces pocketed around Korsun in the Ukraine. The Minsk operation, the Jassy battle in Rumania, the drive to the Oder and the push to Berlin are some of the outstanding Russian tank actions.

Whatever the form of organization, certain it is that armored or mobile corps should be a subject of study at our service schools and in our planning staffs. More than that, we should have a corps testing organization and tactics, much in the manner of our existing airborne corps, which is ironing out the problems in that special field. The excuse that we are in no position divisionwise to form an armored corps is invalid. It serves only to point up our limitations at the armored division level. But whether we team another armored division with the 2d in Europe, or activate one of our present training armored divisions and combine it with the 1st at Fort Hood, or seek some other solution, the war behind us should be convincing enough proof of the need for an armored corps, without the necessity for the further prompting of another continental war.

Obvious and ideal support tools for armored corps would be tactical air and airborne units. The Germans effectively used both. This combination supplies the balanced team for large results—strategic penetrations to enemy airfield complexes, communications and supply zones, critical rear areas. With atomic weapons to blast the initial hole for a penetration, rather than the slow and costly use of infantry divisions, the combination is truly one for the modern battlefield.

ARMOR's preoccupation with the armored corps idea may seem untimely to those preoccupied with Korea. But Korea, admittedly far from being the ideal area for employment of an armored corps, is farther yet from being the common denominator of war, and is more an extreme than a mean in respect to battlefield terrain. Even at that, an armored corps might well have been used to advantage there on several occasions over the course of the last 36 months. Korea's most potent lesson lies in the fact that we should never forget that it is not the kind of war to fight, if fight a war we must. Its characteristics—stalemate, attrition, in-

volvement, cost, casualties, defensive-mindedness—are at odds with offense, speed, surprise, aggressiveness, decision—synonyms of mobility, attributes of an armored corps. We must be prepared for all types of warfare, and in an uneasy world who will say that the European continent—classic mobile warfare battleground—is not a touchy area, a "center of gravity" along the front door of the Iron Curtain?

ARMOR's cover spotlights the five allied armored divisions that comprise the NATO core for mobile defense of Western Europe. Britain's General Harding recently emphasized the importance of NATO armor in "hedgehog" defense. Elsewhere in these pages General Robert W. Grow expresses the belief that America's contribution to coalition continental defense should be what we are most able to supply—a mobile (armored) army, not infantry divisions. Our present contribution is one armored and four infantry divisions.

The Russian forces posed against NATO in Germany are reported to consist largely of Mechanized Armies—armored corps! As Garrett Underhill states it, "That the Russians have 'bought' armor as a result of World War II, and make such a prominent display of the Armored Corps and afford such recognition and rank to mobile warfare specialists, makes the U. S. armored corps question far from an academic one. 'They have the tanks, they have the men, and they have the organization.' In World War II the expert Germans lacked the tanks, while the Russians lacked sufficient training at all levels. Now, six years of intensive training topping war experience may radically alter the Soviet armor formation picture even from World War II."

General Alphonse Juin, commander of NATO's Central European ground forces, recently added some weight to the center of gravity when he told a group of reserve officers, "The enemy has installed himself in Saxony and in the Thuringian salient, 150 kilometers from the Rhine . . . If one transplants to the Rhine region that offensive maneuver developed by the Russians in White Russia against the Germans in 1944 and grants them the same concentration of forces and rhythm of advance, such an attack . . . would be capable of reaching Paris in 23 days."

The lessons of history and the counsel of the mobile warfare experts should be plain. We must think beyond battalions, regiments, groups and divisions; beyond the visible horizon to mobility's horizon—the ranging area of armored corps.

AN ARMOR SOLDIER RETIRES

LT. GEN. WILLIS D. CRITTENBERGER:

Good luck and best wishes to a great cavalryman, a great leader of armor and a great soldier. Your many contributions to the Army's mobility and your distinguished record of service to your country in war and in peace will long be remembered.—

GENERAL J. LAWTON COLLINS

ON December 31, 1952 the Army's senior lieutenant general and ranking tanker retired following a full career's service in the mobile arm.

Willis Dale Crittenberger was commissioned a second lieutenant of Cavalry upon graduation from the United States Military Academy's Class of 1913, and was assigned to the 3d Cavalry in Texas, where three years later he became aide to General James Parker, commander of all cavalry along the Mexican Border. General Parker at that time also was president of the U. S. Cavalry Association, which his aide would head some thirty-five years later.

In the span of years up to 1934 General Crittenberger served in the normal troop, staff and school assignments, as instructor at the Military Academy and the Cavalry School and student in the Cavalry School, the Command and General Staff School and the Army War College.

Returning from an assignment as military intelligence officer in the Philippine Department at Manila, Gen. Crittenberger joined the 1st Cavalry (Mechanized) in December of 1934 to begin his long association with the development of mechanization in the United States Army. This duty kept him in the field for a period up to 1938, when he entered the Office of the Chief of Cavalry in Washington for further duty in connection with the development of mechanization.

In 1940 he returned to Fort Knox to become the first Chief of Staff of the newly organized 1st Armored Division. A year later he assumed command of the 2d Armored Brigade of the 2d Division at Fort Benning.



As the next step in the chain of armor command, he took over the 2d Armored Division, in February 1942.

In August of 1942 came command of II Corps.

It was during this early command period that General Crittenberger stressed such matters as first echelon maintenance, as big a problem as any in the training field. He was an early advocate of completely armoring the armored division, to insure that all of its elements—support as well as assault—were mounted in vehicles that would make the division a self-contained and balanced organization.

He emphasized accuracy of fire in those early days, stressing always the fact that the one who got in the first aimed shot had the jump on the other fellow. And he was an early advocate of the belief which he stated often, that the tank is the best tank destroyer.

An interesting sidelight from the days at Benning; while commanding the 2d Armored Division General Crittenberger organized the Army's first commando unit. It served as the guinea pig for the Rangers of later days.

In August of 1943, General Crittenberger was ordered to Camp Polk, Louisiana, where he organized and became commanding general of III Armored Corps. This was redesignated in October of that year as the XIX Army Corps. It was the headquarters of this Corps which he took to England in January of 1944.

In March 1944 General Crittenberger was named commanding general of the IV Corps in the Italian

1942: CG of 2d Armored Division.

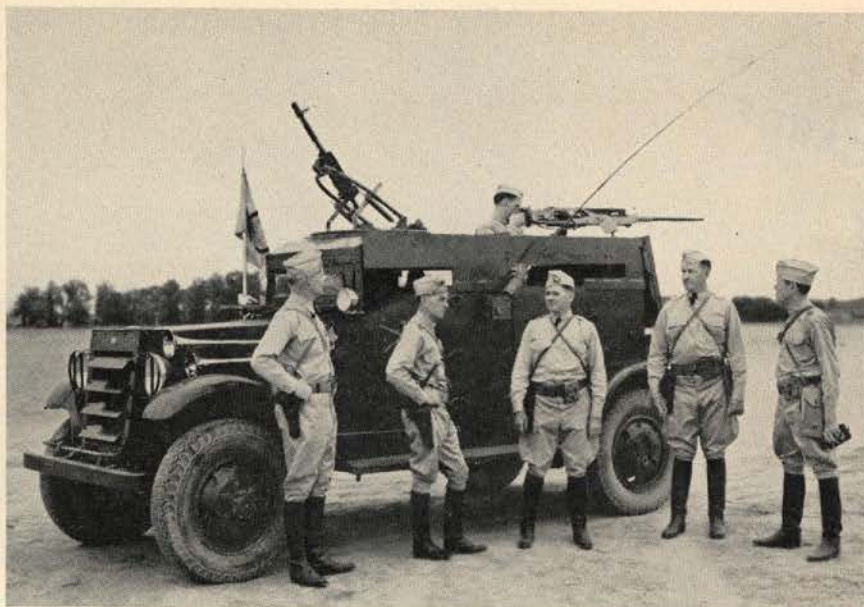
ARMOR—January-February, 1953

campaign. This Corps fought continuously against the Germans for 401 days, as a part of Fifth Army. On April 29th in 1945, General Crittenger received the unconditional surrender of the German Ligurian Army, which marked the beginning of the German collapse in Italy, completed three days later, on May 2d.

A part of IV Corps under the command of General Crittenger was the U. S. 1st Armored Division, with a number of separate tank and tank destroyer battalions adding up to a sizable package of armor for the experienced tankerman to command. The IV Corps armor rolled when it reached the Po Valley.

From Italy, General Crittenger moved to a new headquarters at Quarry Heights, Canal Zone, to assume command of the Caribbean Defense Command and the Panama Canal Department. This was broadened into the assignment as commander in chief of the Panama Defense Command, with the establishment of a unified command in that area.

In mid-1948 General Crittenger was assigned to the Office of the Joint Chiefs of Staff for duty as Senior United States Army Member of the Military Staff Committee of the United Nations, and Senior United States Army member of the United States Army Delegation to the Inter-American Defense Board. In March



The mid-1930's: With the First Cavalry (Mechanized) at Fort Knox, Kentucky.

of 1949 he was appointed Chairman of the U. S. Delegation of the Military Staff Committee of the United Nations. Retaining these duties, he was additionally appointed as Deputy Representative for the U. S. on the Military Committee of the North Atlantic Treaty Military Organization and its Standing Group.

In November of 1950 he moved up to command of First Army, with headquarters at Governors Island, New York, the post he held upon retirement on the last day of 1952.

General Crittenger has two

sons, Colonel Willis D. Crittenger, Jr., and Lieutenant Dale J. Crittenger. Both are members of the Armor branch. A third son, Corporal Townsend Woodhull Crittenger, was killed in action at Remagen Bridgehead in Germany in March of 1945 while serving as a gunner with the 745th Tank Battalion.

Despite his advancement into senior staff assignments, General Crittenger has maintained his active and intimate interest in armor and mobile warfare. A career member of the organization of professionals of the mobile arm, for the past three years General Crittenger has been president of the Armor Association. His is a firm position in the small group of professionals identified with mechanization and armor in its early days, when, as some will recall, it was considered almost a professional hazard to be identified with a medium that was new and about which no firm doctrine had been established.

His long association with armor development and command, the latter leading from a brigade through division and corps, placed him in on the ground floor of a coming field. He, perhaps more than any other individual, can say of all the greats in the U. S. armor picture, "I rode in a command car with him." And he wasn't along for the ride. He was an integral part of the step-by-step evolution of the gathering thunderbolt, making a major contribution to mobility in the United States Army.



In World War II: Crossing the Po River in Italian campaign as CG, IV Corps.

THE STORY OF SOVIET ARMOR

by GARRETT UNDERHILL

The Big SU's

The story of Soviet mobility moves on to self-propelled artillery, infantry-accompanying and antiaircraft weapons and their part in the known pattern of Soviet ground operations

THE Soviets have often admitted that they found out about mobile forces' need for self-propelled artillery the hard way—from actual operations. The operation which brought home the need was the escape of von Kleist's armored army from the Reds' Rostov counteroffensive in November, 1941. To the Reds' dismay von Kleist fought his way out of encirclement, battled off pursuit, and retired to favorable positions on the Mius Line where he held out all winter. The Soviets probably will never get over speculating on what might have happened if they had had SP artillery to jeep up with their mobile forces and act with the required speed.

It took the Soviets well over a year to produce weapons to make up for their lack of mobile artillery, and when the new weapons did appear they weren't at all like the U. S. armored division artillery's 105mm howitzer motor carriage M7 (which incidentally was conceived as an essential need and produced and put into service well before the whole line of Soviet SP's). The Soviet self-propelled artillery produced and used primarily for support roles was similar in design concept to the Soviet

SP's intended primarily for antitank missions. Like the latter, the Soviet support SP's were called "SU's" and were intended for assault-type employment—for delivery of direct-laid fire from forward positions overwatching the action of tanks, cavalry and infantry. The Soviets never did have any self-propelled field artillery intended primarily for indirect fire.

Apparently the closest the Soviets came to SP field artillery was the SU-122 using T-34 medium tank chassis. It appeared in the summer of 1943 along with the SU-85 and the SU's on heavy tank chassis. It was like all the SU's (except the SU-76) in mounting its cannon low in the sloping frontal plate of a box-like armored fighting compartment built up on the front of the tank chassis' hull. In detail it was very much like the tank-destroyer SU-85, except that its light artillery 122mm howitzer M-1938 (the standard Red Army division artillery light howitzer) was fitted so that its recoil mechanism stuck well out in front of the front armor plate. This feature required clumsy and bulky armoring with welded plate, as on the SU-76's similarly protruding recoil mechanism. But unlike the SU-76, the

SU-122's fighting compartment had the normal SU flat armored roof. The armor was generally the same as the SU-85's—a little under two inches on the sides and front.

The vehicle commander (in the left front corner) had a periscope, as did the SU-85's; also a radio. The howitzer was laid with a panoramic telescope as on the field piece version, there being a square armored box (with raising front flap) atop the crew space to house the scope head. The piece itself had very slight traverse. Aiming stakes were stored above the tracks—an added indication that these SU-122's often were used for indirect fire. Since their low-velocity pieces would suffer little bore erosion (compared to the high-velocity SU guns) such usage would be in accordance with Soviet-German doctrine prescribing low-velocity weapons for indirect fires and restricting armor's high velocity weapons to direct-laid fires. Evidence indicates that these SU-122's were organized in platoons of three SU's each (like medium tanks), instead of being organized like artillery in four or six piece batteries.

These SU-122 howitzers didn't stay in production long and went



into the discard towards the war's end, very evidently because they were outclassed by a bigger SU which came into production and service about the same time—the summer of 1943. This big SU, which had vastly greater slugging power than the light 122 and yet excellent mobility, was the SU-152: the M1937 corps artillery gun-howitzer (with typical muzzle brake of the field artillery version) on a KV heavy tank chassis.

The 152 was a unique weapon even in its field artillery version. It and its companion gun (122mm M1931/37) lie somewhere between medium and heavy artillery in weight of piece and in range. Like other armies, when the war began the Red Army had a medium how (like the U. S. 155, though shorter-ranged) and a medium (107mm) gun; they also had a heavy how (203mm) and gun (a 152mm counterpart of the U. S. 155 Long Tom). But during World War II the intermediate 152mm gun-how was the field artillery favorite and was produced and used in great masses.

To achieve its maximum field artillery range of over 19,000 yards, the 152 has to generate the considerable muzzle velocity (for a howitzer) of

some 1,900 ft. per second. This velocity appears to be the feature which made the 152 gun-how piece most suitable for the assault roles which the Soviets planned for their big SU's. Although this velocity doesn't compare with that of the 85mm and the 100mm guns, it is not much less than the 2,200 ft. per sec. of M1940 76mm guns mounted in the 76mm T-34 and KV tanks. The Soviets found that against armored and concrete targets the mere mass of the heavy shell counted for a great deal, affording battering ram rather than penetrating effect.

Like the 122mm M1938 light how, the big 152 was little modified for its armored SU mount. The recoil mechanism was sheathed in a clumsy mass of armor; a large bulge forward of the crew compartment front plate housed the mount and provided for elevation. As with other SU cannon mounted for assault use, the 152 couldn't attain its maximum potential range with the elevation provided for in the SU carriage; the SU would have to park on a suitable slope. But Soviet doctrine was (and is) against such use and indeed, the SU-152 was fitted with a direct-laying telescope only (the aperture to be noted to the

left of the gun atop the recoil mechanism housing). The real handicap was even less traverse than on the smaller SU's—about 10 degrees.

The ammunition was heavy (HE shells weighing about 95 lbs.) and though the powder charges for the M1937 come in brass cases the ammunition is semi-fixed and case and projectile must be separately loaded. Unlike the 76's, 85's, tank 122's, and 100's, the 152 gun-howitzer uses an interrupted thread breechblock instead of the wedge type. That may save weight, but it adds to the factors making for a slow rate.

The crew was housed in the usual SU manner—in a large, heavily armored box with slightly sloping sides crudely welded together. The vehicle commander was positioned to the right (as on all SU's), where he had a periscope of prewar type, and radio with exterior buggy-whip antenna. The driver sat on the left front. There was a pistol port above him and other ports on the right and left sides, with KV-type fixed episcopes protruding from the roof above them. The top edge of the compartment had handrails for tank-borne infantry.

The crew compartment may have looked large from the outside, but

when filled with crew, breech and slide for recoil there wasn't much room for ammunition. Only some 28 rounds could be put in. A German photo showing an SU-152 with its compartment top blown off—reveals the cramped interior and calls to mind the story of the U. S. airman who took his first look at a captured German Messerschmit 109 fighter. He was amazed at its small size; peering into the cockpit in order to comment for the benefit of the assembled press, he exclaimed: "Why, Goering would have to wear a damn tight girdle before he could even sit in that thing."

All in all the SU-152 followed the general design concept for Soviet SU's: it was more lightly armored than the turreted tanks using the same chassis, it was somewhat heavier (55 as compared to 52 tons), for which drawbacks it mounted a much more powerful gun, and had a lower silhouette.

Thanks to the very broad tracks and long ground contact of the KV heavy tank suspension, the SU-152 could get around very nicely. It was noted for fording rivers at least as deep as the top of the suspension, and could negotiate difficult wooded terrain. In the latter roles it served as a good trail-breaker for medium tanks. Often it operated over rough terrain with cavalry corps to envelop and blow apart the crossroads villages which the Germans converted into strong points to deny the road nets to Red motorized forces after the latter had broken through and started a war of maneuver. The Red monster was also good for blowing out or crushing roadblocks. It naturally was very useful in street fighting in major towns and cities.

Built at the same time as the SU-152 was an SU-122. This vehicle was identical to the SU-152 except that it mounted the 122 long gun (M1931) which in field artillery was the companion piece of the 152 gun-howitzer. The SU-152 could be told from the 122 because the gun was longer than the gun-howitzer and had no muzzle brake. Though in SU form the 122 did not have a carriage affording elevation for maximum field artillery range (which was over 22,000 and therefore near that for a U.S. 155mm "Long Tom" gun), it could generate its maximum field artillery velocity of 2625 feet per

second. This SU was never in wide use. It lost its *raison d'être* when the Stalin appeared, for the Stalin mounted in its turret a proper tank version of the corps' artillery 122.

SU-152 production was given great publicity during 1943, the Kirov Plant's new Urals setup coming in for the spotlight. Indeed, at this time the KV heavy tank was dropped and KV output facilities concentrated upon KV-chassis for SU's.

As soon as designer Kotin and his crew had modified the KV into the Joseph Stalin (production of which was undertaken later in 1943), the Stalin chassis came into use for big SU's. Such 152's and 122's were designated the "ISU's" (referred to in English as JSU's). At the same time the crew compartment was made higher and more rectangular, giving its side armor the appearance of having less slope. KV-type hatches were replaced with that type used on tank and SU-100 cupolas then in production. These hatches were fitted with the new wartime simplified standard periscope of which there was one in the front right, one in the front left hatch. No cupola was fitted. However, a 12.7mm (cal. .50) air-cooled machine gun was mounted by the commander's hatch. This was the standard DShK ("Day-Pshaw-Kar") AAMG of the Soviet Army and Navy. The armor in front of the commander was holed for a pistol port, a PPS submachine gun being provided (as became standard for all Soviet armor) to shoot out the ports.

A small slotted dome was positioned in the roof over the gun breech to help evacuation of powder fumes, but it seems evident that these remain a handicap in action. These JSU's

clearly have the same obvious limitations as the SU-100 so widely used for antitank today: relative blindness, coldness in winter, too little ammunition. Though the 152 can fire low-velocity artillery ammunition, it is noteworthy that no effort appears to have been made to provide for indirect fire on-carriage fire control (other than that fitted to other assault-type SU's), and that there is no provision for rapidly servicing the piece with ammunition carried outside the crew compartment.

Though the JSU-122 may still be seen, it is the JSU-152 which (with the SU-100) makes up the SU complement of the shock elements of the Soviet army's shock and mobile warfare divisions: the Tank, and the Mechanized. In these divisions the tendency has been to pair the T-34 85 medium tanks with the JSU-152's in the basic shock unit; the Tank Regiment. The Heavy Tank Self-Propelled Regiment (which may be used to reinforce the Tank Regiments) is the big pool of antitank power, with its Stalin tanks and SU-100's. The Red Chinese have displayed some JSU's in Peking, but not in Korea.

During the Berlin street fighting, the Soviets used a JSU fitted with the Stalin's muzzle brake fitted 122mm. This weapon is not to be confused with the JSU-122 artillery piece. Since the turreted JS-III had a fine silhouette as well as better armor, the tank-destroyer/assault gun mounting of the Stalin's gun was obviously not a worth-while development.

Self-Propelled Infantry Weapons

The Germans went to some trou-



SU-122 Howitzer

ble to provide their mobile troops' infantry cannon with mobile carriages. As early as the 1939 Polish Campaign their 150mm Heavy infantry howitzer appeared on a lightly shielded Panzer I chassis, and later it turned up on a better armored Czech tank chassis for use by Panzer Grenadiers. The whole assault gun program begun by the German artillery arm in 1939—which reached such large proportions as a result of the French campaign and the first summer in Russia—was an effort to provide German infantry with mobile direct support weapons designed especially for that role. The Germans thus had two SP infantry gun types—the assault guns being for direct fire, and the armored infantry cannon largely for indirect fire.

Outside of the 76mm M1927 infantry cannon which they truck-mounted for support of the pre-World War II Tank Brigade of their "Moto-Mechanized Corps" (mobile divisions), the Soviets had nothing similar. Indeed, since World War II began, all their infantry has been in a bad way for accompanying cannon. During the war the short 76mm M1927 "regimental gun" proved too heavy, the M1943 too short-ranged and unstable, and after the war the Soviet Army dropped both models from first-line use. The 76mm M1942 artillery piece (the 1939 tube with muzzle brake on a very light and unstable tubular carriage) often substituted as an infantry cannon during the war and has been assigned that role since. But it is still rather heavy and bulky for manhandling in action.

The makeshift SU-76 has been drafted since World War II to do the infantry accompanying job, and has generally replaced the short 76's in infantry cannon companies. Its present role by no means indicates that direct-fire wheeled-carriage artillery won't open up in direct fire to start an attack, or that the 57mm antitank and 76mm field artillery pieces won't be manhandled along with the infantry as in World War II. The Soviet view seems to be the more fire power the merrier.

Many SU-76's have been made so that their crew compartments are armored over on top, but the armor still remains tinplate and the whole vehicle a rattletrap. The 13½ lb HE shell can't really do a job on protected

infantry weapons emplacements and has too little fragmentation for good antipersonnel effect. Clearly a larger weapon with a better-designed chassis and armor is in order. The poor performance of the SU-76 in Korea underlines the Reds' critical shortcoming.

There is some firm Soviet opinion maintaining that what Red infantry needs is a special armored SP howitzer, which can concentrate on targets bothering the infantry, undertake assault-type fires and yet reach targets in defilade, and move along within the forward infantry formations (which should afford the SP hows protection). The requirement for such a weapon has been urged by some Soviet tankers who believe that tanks should be free to exploit their surprise action and mobility to a maximum, and that the powerful SU's (like the 100 and 152) should be able to concentrate on their main job of supporting the fast-moving tanks.

Self-Propelled Antiaircraft

The mysterious Russians are at their most mysterious when it comes to revealing why they have so long neglected the sort of SP flak which Western armies have found so vitally needed.

Before World War II the Soviets believed that the menace of strafing aircraft warranted improvisation of every possible weapon to light flak roles. The Reds in Korea have well demonstrated what this improvised light flak can accomplish even if lots

of it consists of infantrymen cutting loose with personal weapons. But when it comes to developing and introducing light flak especially intended for use against tactical aircraft, the Soviets have been very weak indeed—apparently weak in the heads as well as in matériel. They used widely before World War II a multiple-mount machine gun (four belt-fed water-cooled cal. .30 heavy Maxims grouped on a pedestal) which was sometimes truck-mounted; this they didn't discard till after the first summer campaign of '41, although years before, U. S. Army tests had shown with Brownings that this type of light flak was no good. The Soviets had during the war a 12.7mm (cal. .50) air-cooled M1938DShK AA machine gun and a Bofors 37mm M1939 automatic cannon (like our 40mm), but unlike the Western allies and the Germans the Reds never grouped these in multiple mounts. They never had any homemade armored flak at all. All they had in the SP line outside of captures were some 100 M15's and 1,000 M17's via Lend-Lease. Both were half-track mounted, the former comprising a Colt 37mm cannon and two air-cooled .50's; the latter four .50's.

It is said that when the Soviets awoke to the need for SU's they could see that the need for SP and armored flak would be about nil by the time SP's could be gotten into service. Conditions were indeed such as to permit the Soviets to see that it was most unlikely that SP flak would be needed, but the question



SU-152

is: did they really think things out or, like so many of the Germans, were they so conditioned by their Eastern Front experiences that they didn't realize what good tactical air could do?

The Luftwaffe at its prime never had anything like the mass of tactical aircraft which the Allies used in the narrow cockpits of Western Europe and the Mediterranean. Except possibly for Richthofen's outfit, it didn't approach the efficiency of Anglo-American forces in tac air. The broad reaches of Russia, weather, and the possibilities for concealment on the Eastern Front imposed great handicaps on air operations. And as the Red Army slowed and then drove back the Germans, the Western Allies were drawing off the Luftwaffe until General Spaatz utterly destroyed it in the great February-March 1944 air battles over Germany. So the Soviets had no more reason than the Germans to learn from the Luftwaffe about what really good tactical air could do.

The Soviets' own air operations weren't such as to demonstrate convincingly enough to anybody the potentialities of tac air. Certainly the Red air armies—despite their use of swarms of homemade and Lend-Lease aircraft mainly on close-support missions against combat troops—left the Germans somewhat contemptuous of air's effect on ground action. Indeed the Germans, seasoned on the Eastern Front, wouldn't credit Rommel's warnings of what Anglo-American air had done to him in Africa. They only learned their lesson from Normandy.

Did the Soviets learn theirs by studying the Germans' experience?

At least Marshal Rotmistrov, their foremost mobile warfare theorist, seems to have learned his. He and some other Red tankers consider SP flak indispensable not only to protect tanks on the march, but to cover them in assault. But the only native Soviet product displayed (outside of the usual light flak set up in trucks) has been a 37mm M1939 Bofors mounted on the rear of a modified SU-76 (minus of course, the 76mm gun). This SP flak appeared in the 7th Kantemirovka Tank Division's Tankists Day parade in Moscow in 1946 and hasn't been displayed since. The 37 was mounted on a turntable



JSU-122

with chest-high armor for the crew, the crew having no overhead protection. By all standards of World War II and Korean experiences, such a single-barreled 37 had quite inadequate firepower and deserved to disappear.

Certainly the lack of SP flak—particularly armored SP automatic cannon—has been in the past a glaring weakness of the Soviet Army in general and its mobile arm in particular, at least so far as its efficiency in a contest against Anglo-American type forces is concerned. It would be hard to tell short of actual combat whether the Reds have really learned their lesson—gotten it in their bones. That the Soviets did not learn from World War II is suggested by the action of their Korean satellite army, which was not only very ill-armed with mobile flak but took off into the teeth of the U. S. A. F. and Navy tac air power in a manner which can only be characterized as foolhardy. Nevertheless, it is dangerous to draw conclusions from the actions of a satellite, and what has happened in Korea may well prove to be an inestimable boon to the Soviet Army—if indeed they needed to be awakened to the danger of Anglo-American tactical air.

The Soviet Army tank SU situation during and since World War II is such as to cause the average person to wonder what goes on, anyway. There are many things to be said for the Soviet Army's tanks and SU's,

for the concepts behind them, and for their tactics and technique. But there are also obvious defects, and instances where practice doesn't jibe with theory and doctrine.

The use of the heavy SU's—particularly the SU-152's, would appear to afford very rapid and powerful support to both armored and infantry attacks (i.e., ones in which the Tank Regiment of medium tanks is the prime assaulting unit, with its own protecting tank-borne tommy gunners; and ones in which a Rifle Regiment is the main element of the assault). Certainly the sudden eruption of both tanks and heavy-gun SU's onto the battlefield from well-concealed positions and routes must have no mean surprise effect. The sound and fury of their presence and fire should have considerable shock effect. Undoubtedly the SU's large projectiles can be very destructive, and may achieve morale effect on infantry even from near misses and high-velocity ricochets. There may be something to be said, too, for the Soviet claim that such direct-laid support fire is available more quickly, and can gain effect with fewer rounds in less time than indirect fire concentrations of medium (or even heavy) artillery.

In the view of some Soviet authorities, the SU's are a natural and necessary development. They say that machine guns and long-range musketry drove field artillery to cover and to the use of indirect fire methods about the

time of the 1904-5 Russo-Japanese War. Batteries then stopped galloping up to take position between infantry formations (or in front of them), and firing at the enemy over open sights. In World War I the use of defiladed cover for artillery (and some heavy infantry weapons) brought forth howitzers with the curved trajectory needed to reach such targets. But such fire took time and loads of ammunition—with consequent loss of surprise effect and speed of action. Moreover the most intense artillery preparation failed to neutralize or destroy all hostile infantry and artillery weapons. Hence direct fire accompanying artillery was created, to be followed by tanks. The tanks themselves opened up warfare, necessitated a high degree of mobility for all arms and thus—in the Russian view—created in World War II a need for self-propelled artillery. In order to maintain the tempo of the attack by speed of reaction to target location and by conservation of ammunition supply—making a round or two do where indirect fire artillery would fire a concentration—the SP artillery had to be the direct-fire assault type, able to intervene directly on the battlefield and move within tank formations in pursuit and withdrawals. In effect, the Soviets say, war has come full circle and back to the execution of many artillery missions the horse artillery way—a way which should never have been abandoned. By this view much that happened between 1890 and 1943 was along improper lines of thought; it was a dreadful mistake to open up range, emphasize the development of complex techniques and matériel when old-fashioned speed and surprise and shock were still the best way to achieve combat objectives.

Some Soviet armor authorities made the point right at the end of World War II that they had been aware of the need for reform of armor—and ground forces—tactics even before the discovery of “mass effect” weapons like the atom bomb. They stated that the potentials of artillery and tactical aircraft demonstrated in World War II were such as to require warfare to be reformed so as to move at a much faster tempo—with more rapid marches, greater dispersion, looser formations and faster groupments for the attack. They claim that the tactics

and capabilities of the World War II tank-SU team meet the requirements of the future’s high-tempo shock warfare as does no other weapons system.

But are these Soviets *really* aware of the capabilities of U. S.-type artillery and tactical air? What have their observers in Korea reported? Are the Reds still justified in claiming that the heavy SU’s—moving right with the tanks, whether in mass assaults, or as part of a point feeling its way forward in pursuit—are the best means of stepping up the tempo of warfare?

Certainly the SU’s have one advantage over U. S. armored artillery in present-day operations: their crews are fully protected and don’t have to expose themselves when serving the piece. Their roof armor, Korea indicates, should be useful in mobile warfare as protection against mortar and artillery fire, small arms, and—to some extent at least—atomic weapons.

Nevertheless, the Soviets’ wisdom in employing so many heavy guns so far down the line may be questioned. The armament of the SU-100 and 152 after all is classed as corps artillery when on towed mounts. In such form on U. S. artillery SP carriages it could intervene at great ranges, and cover a very wide front. Its potentials would seem gravely limited when as SU’s it is locked up as organic equipment within relatively small divisional tank units. The potentials may seem even more limited when normal SU employment is taken into account, for usually two heavy-gun SU’s (in guns the equiva-

lent of a third of a U. S. medium artillery battery) devote themselves exclusively to the support of five to ten tanks and maybe also a battalion of infantry.

There may be a great deal in the Soviet claim that a faster tempo of war is necessary, and that heavy direct-laid overwatching fire for tanks is the way to attain it. But there is every reason to suppose that the Soviets have been influenced in their thinking by having to make the most of their own field artillery’s notoriously poor flexibility and general indirect fire shortcomings. A nation lacking the human material convertible into artillerymen to equal America’s may well be forced to fall back on “Sherlock Holmes” marksmanship techniques (the great detective’s gunnery skill is illustrated by the incident in which Holmes confronted a culprit and “clapped a pistol to his head”).

The suggestion is strong that the Soviets did indeed develop their emphasis upon SU’s because of the influence of conditions peculiar to the World War II Eastern Front in general and to Soviet Russia in particular. Just as the Soviets failed to experience the sort of tactical air the Germans did in the Mediterranean, so they failed to come up against hostile field artillery which in quantity and techniques and ammunition supply approached the American. The Red Army’s own vaunted artillery arm of World War II was a horrible example of what can happen



37mm M1939 Bofors mounted on a modified SU-76

when the Soviets strive for bigness and numbers at the expense of quality. The Soviet artillery empire-builders who sold Stalin in 1941 on an immense wartime field artillery program overreached themselves. Red industry could turn out the guns, powder and shell, but it couldn't turn out the sort of fuzes needed. The Artillery arm itself couldn't train personnel able to carry out more than rudimentary pre-planned operations and simple techniques.

While the Artillery at first had jurisdiction over the SU's, it is significant that by the time the SU's appeared in 1943 the mobile arm (Tank and Mechanized Troops) had taken them over. The implication is plain that the mobile arm found the Artillery quite incompetent to satisfy the requirements of mobile warfare and hence by bureaucratic finagling the tank general seized control of the SU's. With the SU's, in no time they built up a very sizable artillery empire of their own.

The situation recalls similar ones in the U. S. Army, as when the Cavalry managed to get tanks when the National Defense Act allotted tanks to the Infantry: the Cavalry simply called their tanks "combat cars." It may also be remembered how the Coast Artillery refused to adapt its flak cannon to fire against ground targets for fear—and a justified fear—that the Field Artillery would then lay claim to jurisdiction over flak.

Hence it is possible that the reason why the Soviet SU's lack indirect fire on-carriage fire control is other than purely tactical. It may be that the Soviet mobile arm wants to be sure that the Artillery lacks reasons to put in a claim for the return of the SU's. To preserve one's "empire" is only a human feeling, and in the Soviet tankers' case is easily bolstered by the doubtless righteous feeling that with SU's they can do a better mobile warfare job than can the Artillery.

A very strange feature of the Soviet tank-SU setup is the way the Soviets mix up their SU's and tanks. Some Soviets have asserted that considerable advantages in march and combat efficiency and in logistics should result from having SU's and tanks which both use the same chassis. But in the mobile warfare divisions T-34 turreted tanks have been

and still are mixed in units with JSU's, and Stalin tanks with SU-100's using the T-34 chassis.

Obviously much theory has been evolved to fit happenstance—with the result that it far from fits in all cases.

For example, the Soviet-German concept—that the SU shall mount a heavier gun than the turreted tank using the same chassis, has been several times upset by technological progress. The concept may be completely upset in the future. If the Soviets introduce a new "medium" tank with a 100mm gun in its turret—a development held desirable in their military press towards World War II's end—what requirement is there for the SU-100? What, for that matter, becomes of the Stalin tank with 122mm gun? And how about the future of the SU's in the 152's class? Some Soviet authorities have said that they don't want a big SU with gun larger than 152mm. It would be too big if large enough to carry adequate ammunition and anyway would be poor as antitank. If they got the chance, might not the Soviet armor people come up with a 152 more like the pre-World War II KV-II job—one with considerable traverse if not a turret and also good indirect fire capabilities?

In short, may not the Soviet tank-SU scheme result from World War II requirements and the necessity to make do with guns and chassis then available? With an opportunity to develop entirely new vehicles and armament, may not the Soviets take a whole new look at tactics and armored vehicle requirements? Might they not scrap SU's (though they'd hold onto the old for economy) and in a future line of armor simply come out with a new medium and a new heavy-gun tank as before the war? Would they then also try to convert their present field artillery components of mobile divisions from towed to SP?

Whatever may be the answers to these questions—whatever may be the real value of SU's in current warfare, it is clear that Americans at present have no reason to shout with joy and clap their hands.

Though for nine years the Soviet tank-SU team has been a vital element in both Soviet offensive and defensive warfare, two years of war in Korea have gone by without the

Reds giving us a single chance to see one of the big SU's (much less a team) in action. In the very first action American ground forces fought in Korea, Americans were treated to the "mad-bull" charge of T-34's when leading off infantry attacks, but the ill-trained Red tankers passed right through the U. S. position (including the artillery) and disappeared down the road. The North Korean infantry lacked both the big SU's and the skill to capitalize upon this charge of Red knights in armor. But might not regular Soviet soldiers, with far more prolonged training and with SU's to maintain the supporting fires, do far better? Even decisively better against current U. S. infantry defense, of which the Reds have made so close a study?

And then what about the question of new armor with or without SU's and changes in tactics and techniques?

It can't be stressed too much that the tanks and SU's the Soviets display today are old in basic design of chassis and engine—the T-34 being 16 years old. Morosov surprised the world when that T-34 tank made its debut in action in 1941, and Kotin did the same when the wraps came off his KV heavy tank (of which the Stalin and JSU's are modifications).

What original armor projects have these great brains been working on?

Until we know for sure, it is dangerous for Western authorities to announce that even the Patton 48 is the "finest tank in the world," and that the new U. S. heavy "can outslug any land fighting machine ever built." That is the sort of blind "one-way" thinking which—history repeatedly warns us—can get us in a lot of trouble.

Just how much trouble no one can tell. As in the case of the Red Chinese and Koreans, so far the worth of even extant Soviet armor has been obscured by the low level of Soviet troop skills. But the record of the engineers who design Soviet armor proves only too alarmingly that the Reds can vastly improve their skills over the course of years. If the Soviets' Tank and Mechanized Troops can develop their skills the way the designers of their Tank Engineering Service did theirs, the West has little reason for complacency and much for worry.

65 Years Ago

In the celebrated charge of the Dragoons of the Guard at Mars la Tour, their loss was 96 officers and men and 204 horses. Note again the loss of horses. Surely the horse in a charge becomes a projectile with great velocity and battering force. The infantryman must either stop him or get out of his way. "His neck," in the words of JOB, "is clothed with thunder; he rejoiceth in his strength, and goeth on to meet the armed men; he smelleth the battle from afar off, neither turneth he back from the sword." That is why so many horses are killed. Let us now substitute the revolver for the saber, and the effect of cavalry is at least doubled by the new element that enters the question. The skirmisher can no longer ignore the rider, the reach of whose terrible arm is now increased a hundred fold.

Sabers or Revolvers?

LT. EBEN SWIFT

50 Years Ago

The Boer War affords a broader field than our operations in Cuba, China and the Philippines, for comment and criticism regarding the use and importance of mounted troops. Here again we find the cavalry star in the ascendant. The British cry from South Africa has been for cavalry, more cavalry, and then cavalry. Something over 200,000 animals have been transported to Cape Town, and British agents in various parts of the world are still buying and shipping them. Their mounted infantry has done some good work, but it has proved more expensive than cavalry, owing to the enormous destruction of horses. The Boer is a natural horseman, and it is owing to his mobility that he has been able to strike in unexpected places, to make his fights in one defensive position after another, and to turn a British flank attack into a frontal attack. Had the British been as mobile as the Boers, the war would probably have been ended months ago.

Cavalry Experiences from 1898 to 1901

CAPT. KIRBY WALKER

25 Years Ago

If we carefully study our Field Service Regulations and the important cavalry operations during the World War, we shall find that success can be attained when the important characteristics of cavalry are fully exploited and the employment of the field artillery is

adapted thereto. The outstanding characteristic of cavalry, wherein it differs from infantry, is its mobility. The more restricted this mobility, the nearer will cavalry combat approach that of infantry. When cavalry is separated from its horses or transport, it becomes infantry in fact if not in name and adopts the combat methods of the latter. This mobility endows cavalry with the ability to carry out certain combat actions which it would be difficult for infantry to execute. For example, cavalry can move by bounds, quickly transport its fire power to a critical locality, operate at a considerable distance from the main forces and often by surprise, and operate on an extended front with wide intervals between its combat groups.

Field Artillery with Cavalry

MAJ. EDMUND L. GRUBER

10 Years Ago

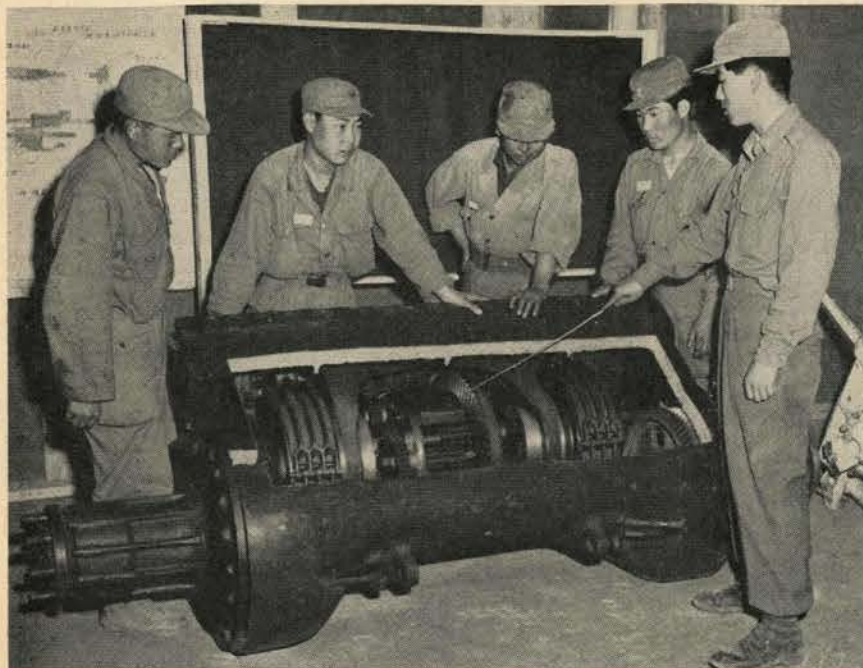
Practice has frequently confirmed the advisability of putting heavy tanks in the first echelon, mediums in the second, and then the light tanks. This formation considerably reduces losses and brings better results.

Tanks give the best results when employed *en masse*. This decreases the losses and achieves success in battle. Success, however, can be achieved only with reliable help from the artillery, aircraft, and infantry. When employing massed tanks the commander must have at his disposal a strong control of the center, by means of which he can maintain constant contact with his tanks and maneuver them one unit at a time and thus make the greatest possible use of each minor unit.

Until now radio has been almost the only means of communicating with tanks and directing them in battle. Experience has taught us that radio stations frequently break and become useless. A recent example of this occurred when several dozen tanks were sent into action but towards the end of an encounter communication and control of the tanks had to be maintained through one single station. Since then the tank commander's control center has included two or three light tanks which the commander uses to carry orders and information to tanks in action. At the same time these light tanks form protection for the headquarters as well as for the commander in the event that his tank is knocked out or that the enemy makes a flank attack. In order not to disclose the whereabouts of the commander to the enemy, tank units advance in open order behind the machines which flank the commander's tank.

Tank Communications in Battle

COL. M. KHOTIMSKY
Red Army



Tanker students at the Republic of Korea Infantry School's Armored Group section study the intricacies of tank gear mechanism under a Korean instructor.



Lacking the mechanical background of the American GI, ROK tankers have yet made amazing progress in learning how to use the complicated weapons of war.



ROK tankers clean the tube of their tank gun, an operation in strange contrast with their agrarian past as evidenced by a backdrop of terraced land.

Here's a Preview for Ike

ROK Army Will Take Time to Build

KOREA, Nov. 6—When President-elect Dwight D. Eisenhower comes to Korea, he probably will be told that the South Korean army, even if given all-out American material support, is counted upon to defend Korea alone for a long time.

General American officers serving

THE ROK ARMY BUILDS ARMOR BACKBONE

One bleak October morning in 1951, 20 American-built medium tanks, bearing the red, black and blue insignia of the Republic of Korea, nosed their way out from behind a hill on the East-central front and into the pages of history.

It was the first time that tanks manned by members of the ROK Army had gone into action on the Korean battlefield.

Today many ROK divisions have their own supporting tank companies, an important consideration in the plan to build the South Korean forces to the stage where they can assume an even greater role in the United Nations effort than their present substantial one, and thus relieve the United States of a portion of its heavy troop contribution.

In 1950, the Red drive across the 38th parallel caught the Republic of Korea forces without armor or artillery support. Since that time, the United States Military Advisory Group to the Republic of Korea has been hard at work building one of the greatest armies in the Orient from the excellent material available. Today Korean troops stand fast along more than half the battle front. The Army's ten combat divisions have been put through the most rigorous pre-battle training the American officers could devise. Induction centers are handling more than 900 draftees a day.

The importance of the combat team has been stressed, which has meant providing tanks, artillery and air support for the new army.

With courses patterned on the Stateside model, a Korean faculty was set up by KMAC, then officer and enlisted tank training got under way. ROK tankers get 14 weeks of training, leading from individual up to full company training. Next is the front line, where they are turning in a good account of themselves.—SERGEANT THOS. H. MAPP.

Defense Dept. Replies to GOP

ROK Army Will Be Strengthened Soon

The United Press
The Defense Department today countered mounting Republic criticism by announcing that the South Korean army will be substantially "in the near future."

Statement denied published James A. Van with view



ROK tank crews fire the M24 tank weapons on the ROK school range, under supervision of U. S. KMAC personnel. Koreans are good at range estimation.



Past the individual training stage, ROK tankers take a full platoon of tanks on a day of unit field tactical training; Next step up the line is the front.

OFFENSIVE *by* FIRE!

by FIRST LIEUTENANT ROBERT S. HARPER

Armor's trinity of characteristics has had to be modified to some extent for the Korean battlefield. But in spite of a sacrifice of full mobility and shock, members of the arm have the big gun—firepower—to carry the fight to the enemy

THE superiority of American armor in Korea has not been seriously challenged since the morning of September 1, 1950 when elements of the 72d Tank Battalion routed an attacking enemy tank brigade at Yongsan, South Korea. Properly exploited, this unchallenged superiority can become the decisive factor in ground operations in this theater.

The tank is a weapon of mobile warfare, but we must not ignore the inherent mobility of the tank gun. The capabilities of this weapon permit a mobility of fire not wholly dependent on freedom of maneuver. Positioned in selected firing sites on our present MLR the tank gun combines sufficient accuracy, range and power to destroy the formidable enemy emplacements opposing us along the Korean front.

We are capable at any time of assuming the offensive—an offensive by fire.

By the planned, methodical destruction of enemy weapons emplacements, observation posts and personnel bunkers we can render selected areas of the enemy line untenable through the effect of accurate concentrated tank fire.

In conducting such an operation there are two vital factors; proper selection of firing sites and accurate adjustment of tank fire on distant targets.

Selection of Firing Sites

As reconnaissance is the key to mobility in maneuver, so it remains the key to mobility of fire.

Prior to a detailed reconnaissance, information of the enemy, available through G2 sources, should be utilized to estimate local enemy strength and disposition. A personal reconnaissance should then be conducted of the entire zone of responsibility. During this reconnaissance it is advisable to prepare an overlay indicating limits of fire to the flanks and dead spaces in the zone of fire from each tentative position. Utilizing the information gained from a hasty study of enemy dispositions and combined fields of fire from proposed positions on the MLR, an estimate can then be made of the number of tanks required in each sector to dominate a designated target zone. Experience indicates that a minimum of two tanks should be employed in any isolated position. If the area offers a restricted field of fire with so few lucrative targets that the employment of only one tank is warranted, it is usually preferable to designate the area a supplementary firing position from which, on occasion, a tank can execute such firing missions as are deemed necessary. Defensive consid-

erations may leave us no alternative; however, we must avoid the common error of immobilizing our tanks and neutralizing their fire by placing them singly in nonproductive firing positions.

Tanks must be positioned on high ground to exploit fully the range capabilities of the tank gun.

Fields of fire must be complementary to insure that every possible portion of the enemy position may be brought under fire.

Firing sites must be selected to permit the massing of the fire power of the maximum number of tanks on a designated target area.

Except where antitank defense is the primary consideration, tanks should be positioned along the entire sector rather than clustered in platoon size units with duplicated fields of fire. By this method we encourage a proper distribution of defensive fire to support any threatened portion of our line while at the same time we further our offensive aim of directing tank fire against the target area from every possible direction.

Supplementary and alternate firing positions must be prepared to permit the employment of the entire armored unit on line simultaneously. These positions are then available from which to deliver massed defensive tank fire against strong enemy forces attempting to penetrate our line or for use in support of local infantry operations.

Ease of supply should be consid-

FIRST LIEUTENANT ROBERT S. HARPER, Armor, was an enlisted man in World War II. He has just completed his second tour of duty in Korea, where he has been a tank platoon leader and company commander.



U.S. Army

ered but must remain secondary to tactical considerations. Far too frequently we are content to occupy the more accessible positions on the false assumption that only these can be economically supplied. It is preferable to adopt the more positive approach of selecting those areas from which maximum damage may be inflicted on the enemy—then find a way to supply the position. Every tank company is issued tank dozer equipment to assist in the construction of tank roads in difficult terrain. Failing this it is often feasible for tanks to return to a forward dump for resupply. This is particularly appropriate for tanks occupying positions of limited defensive importance. Tanks may be resupplied by M39s or other tanks. During periods of poor trafficability, a shuttle system composed of wheeled vehicles, tracked vehicles and finally pack board to the tank position can be employed regardless of trafficability. However, it is advisable to maintain a three-day supply of ammunition, combat rations and water at primary firing positions to permit operation even though supply routes may be temporarily impassable due to enemy action or inclement weather.

Having maneuvered tanks into seemingly inaccessible positions we will be amply rewarded by targets

ill prepared to withstand the effect of concentrated tank fire from a surprise direction.

Adjustment of Tank Fire

Accurate adjustment of tank fire on distant targets is the other factor vital to the success of such an operation. At a range of 5,000 yards the tank cannon possesses sufficient power to destroy most enemy emplacements. However, the gunner's telescope is not sufficiently powerful to permit the accuracy of adjustment necessary to engage these distant targets. Due to the frequent periods of poor trafficability and the prevalence of antitank mines in normal tank approaches it is often not feasible to move tanks forward to engage targets at close range. To exploit more effectively the range capabilities of the tank weapon, an observation scope more powerful than the standard five to eight power instrument available to the tank gunner must be provided.

Both the Battery Commander's Telescope M65 (10 power) and the Observation Telescope M49 (20 power) are suitable. Tank observation posts equipped with one of these instruments must be established to assist the tank gunner in adjusting accurate fire on distant targets. Other advantages are immediately apparent, for example, the increased accuracy

possible when engaging close range targets requiring great precision of fire—such as individual weapons emplacements or when adjusting fire on apertures or other vulnerable points of bunkers which cannot easily be destroyed by ordinary methods. By use of these more powerful instruments it is possible to penetrate enemy camouflage and insure destruction of targets which would otherwise escape detection.

Tank observation posts should be established sufficiently removed from firing positions to insure that muzzle blast and dust will not interfere with accurate adjustment. This is particularly important if close range targets are to be engaged. This separation of tank OP from firing position also reduces the possibility that enemy fire directed at tanks will fall on observation posts.

The observation posts should be located so that the fire power of the maximum number of tanks may be adjusted into the target area. Obviously, to fulfill this requirement the OPs must occupy high ground. However, since their function is to adjust direct fire, the dominant considerations must be an unobstructed view of the target area and a location to permit adjustment with a minimum amount of interpolation by the observer.

Location and operation of these observation posts is dependent primarily on proximity of the enemy and his ability to direct effective small arms, mortar and artillery fire on the position. To insure continuous operation when subjected to observed artillery fire it is necessary to construct a bunker type OP capable of withstanding the heaviest enemy artillery. To minimize the effect of small arms fired into observation apertures it is advisable to use the BC scope for observation. Since this instrument is equipped with periscope-type heads, the observer is able to remain in complete defilade while adjusting tank fire. When general area observation for an extended period is conducted the BC scope is less fatiguing than the telescope (20 power). However, it is only under these conditions that the BC scope is preferable to the more compact, more powerful 20 power scope.

Volume of enemy mortar and artillery fire must be considered for it is on this basis that means of communication between observation post and tank firing positions is determined. If the volume of fire is so heavy that telephone lines are likely to be destroyed, the communication must be exclusively by radio. An SCR 300 in OP netted with an ANVRC-3 in the firing tank is suitable. When operating in mountainous terrain and coordinating fire for an extended sector it is sometimes necessary to utilize a tank as a relay station. The observer equipped with a BC scope and

SCR 300 having observed a target, designates the tank to execute the fire mission, then adjusts fire by SCR 300. If a relay tank is being used, the tank commander receives the transmission on his ANVRC-3, relaying the corrections to the firing tank by SCR 528. This is an extreme case and such conditions prevail in only isolated localities in this theater or for limited periods of time. However, by employing a relay tank, where wire is not feasible, the fire power of any number of tanks may be directed into target zone.

In those areas where the volume of artillery is light we can lay a direct telephone line from tank observation post to the various tank positions.

In those areas where we occupy the dominating terrain, and the artillery is negligible and the enemy is not in close proximity to our firing positions, it is feasible for a tank, occupying a suitable position, to be used as an OP. Under these conditions the tank commander places the 20 power scope on his tank turret and adjusts fire as with binoculars. However, it is ordinarily preferable to establish a ground OP approximately 50 yards from the tank. Dust and concussion from tank weapons are minimized. The observer has a stationary observation site within voice distance of the tank commander. The driver or BOG may be used as observers.

It is under these latter conditions that this improved method of observation is most effectively combined

with the destructiveness of the tank cannon.

At 1,000 yards, utilizing either of these instruments, a tank gunner is able to adjust precision fire on any aperture large enough to serve as a firing port for small arms weapons. At 5,000 yards he can adjust on individual bunkers and destroy them with the powerful tank gun. This capability combined with the high rate of fire, the variety of tank ammunition available and the ability to shift this accurate volume of fire rapidly over an extended target area constitutes *mobility of fire*.

Having selected firing positions and established tank observation posts to cover the sector of responsibility, we are now able to begin a battle of tactical attrition at its deadliest. Firing initially from the security of our present MLR this armor protected base of fire can lay siege to the enemy line.

Phases of the Operation

Since the enemy is wholly dependent on ground observation to direct effective artillery and mortar, our first objective must be to blind the enemy by destruction of his forward observation posts. By neutralizing these positions early in the operation we will materially reduce both the volume and accuracy of enemy counterfire. Since the enemy will exert every effort to reestablish these important installations, the destruction of enemy OPs must remain a priority mission throughout the operation. Simultaneously, artillery weapons capable of bringing direct fire on our MLR and identified command posts must be neutralized.

While we remain on the alert to counteract enemy efforts to reconstruct destroyed positions, we are now able to begin the methodical destruction of enemy weapons emplacements to our immediate front. We must not be content with destruction of widely separated obvious targets but by utilizing the observation scopes every bunker in the designated zone must be destroyed. To insure that the entire target area is covered effectively, primary sectors of fire should be designated for individual tanks. This makes it less likely that tanks will engage only the more obvious targets, or shift fire to targets already engaged by an adjacent tank, when one



High ground positions allow full exploitation of range capabilities of the gun.

tank is sufficient to accomplish destruction.

During this phase tanks should move into firing positions simultaneously throughout a regimental sector. Since a number of targets are presented to the enemy, the concentration of counterfire is consequently reduced. It is during this period when effective tank fire is directed against the command posts and forward observation posts that enemy reaction will be most violent. In those areas where the volume of enemy artillery is heavy, communication trenches should be dug from personnel bunkers to tank escape hatches. Personnel are then able to remain under cover at all times.

In those areas where concentrations of mortar are directed on tank positions, heavy logs should be placed across the back deck of the tanks.

Firing positions should be prepared to insure that the suspension system is protected.

This is an important period for it is clearly the decisive battle between the tanker and the enemy artillery forward observer. The objective of the FO is to drive the tanker from his firing position by a volume of artillery before the series of command posts and OPs can be destroyed. The enemy forward observer often wins this battle when engaged with inexperienced or halfhearted tankers; for they are easily bluffed off position by fire incapable of inflicting more than superficial damage. Therefore, a special indoctrination and training period must precede operation.

Pressure should be exerted along the entire front. However, there are some areas more favorable for decisive action than others. Dominating terrain features insuring long fields of fire combined with flanking terrain to be used as a base of fire are particularly suitable. Terrain from which relatively flat ridges radiate to flanks and rear of enemy positions can be used to advantage. It is from this no-man's land, forward of the MLR, where the volume of observed enemy artillery fire renders daylight infantry operations prohibitively costly, that tanks will find the most profitable targets. We must never be content with establishing firing positions on the MLR and remaining there indefinitely. We must move forward continuously, utilizing favorable tank



Well dug-in positions give maximum protection against enemy retaliatory fire.

approaches, moving ever closer to the enemy positions, reaching forward with the tank gun to destroy the enemy power to resist.

We must avoid routine in conducting firing missions. This campaign is as much a battle to destroy the enemy will to resist as to destroy his ability to resist. Therefore, he must never be able to predict at what time, in what manner or from what direction his destruction will be accomplished. We can achieve a high degree of shock action by capitalizing on the psychological effect of tank fire. One method is to concentrate the fire power of a number of tanks on a relatively small target area, then shift rapidly to widely separated targets which the enemy has been led to believe are immune from effective tank fire either because of their range, location or obscurity. The variety of tank ammunition, properly employed, is effective as a psychological weapon. High explosive, fuze delay in addition to being most effective for use in bunker destruction has an increased psychological effect over HE, super quick. APC will destroy installations which the enemy believes to be impregnable. Tactically, White Phosphorus is useful when registering on distant targets. Used to exploit its psychological effect, we may fire it in heavy concentrations and cause the enemy to abandon formidable emplacements. Indeed, there is a positive shock effect inherent in receiving accurate devastating fire from an armor-protected weapon

which cannot be neutralized.

Indications of disintegration of the enemy front will be unmistakable. During the initial phase of the operation the enemy will direct a great volume of accurate mortar and artillery fire on the tank positions. He will attempt to reconstruct every destroyed emplacement. After a few days, however, it will become apparent that the enemy is rebuilding only those installations which he considers vital to the security of his battle position. This decision is the fatal one for where previously there were perhaps 50 bunkers in an individual target area, it is discovered that only half are being consistently rebuilt. Consequently, it is possible to mass a greater volume of fire on remaining positions.

Simultaneously, it will be noted that both the volume and accuracy of artillery and mortar fire have decreased. After the greater volume of incoming mortar fire lands well forward of the tank positions and artillery is apparently being fired with little opportunity for proper adjustment. This of course indicates that the enemy artillery forward OPs and mortar firing positions have been forced to the rear.

Utilization of Weapons

It is during this phase that night harassing fire assumes importance. Once the locations of the vital enemy emplacements are ascertained it is a relatively simple matter to direct effective harassing fire against these

positions to discourage reconstruction during hours of darkness or during periods of restricted visibility.

The M16 mounting four .50 caliber machine guns is well suited to restrict movement in target area under cover of darkness. The M19 mounting two 40mm cannon is capable of delivering a highly accurate volume of fire at intermediate ranges. Infantry mortars can be employed effectively to inflict casualties on reconstruction parties working under cover of darkness. Machine guns from the Heavy Weapons Company can be used in designated areas to discourage movement of enemy troops. Recoilless weapons are well suited for employment in direct fire missions against well defined targets at relatively close range. They can be effectively employed during daylight to maintain neutralization of local target areas and free tanks to engage more distant targets.

The artillery will be our most powerful ally during the entire course of the operation. Their ability to direct volume fire on reverse slopes combined with their system of ground and air observation insures valuable support. The artillery observers are a source of accurate information regarding location of enemy targets. Close liaison must be maintained between tank commander and the artillery FO located in vicinity of firing position. If feasible a direct telephone line should be installed from the artillery OP to the tank position so that the forward observer can direct tank fire on precision targets, targets of opportunity appearing in his sector or targets out of range of the forward battalions. The artillery is a defensive weapon of great power; however, its offensive capabilities are somewhat limited. While the artillery is capable of neutralizing an area temporarily by forcing enemy personnel under protective cover, it does not possess sufficient accuracy or power to destroy the more formidable enemy emplacements. It remains the primary antipersonnel weapon. The tank is the primary antiemplacement weapon.

When all these weapons are effectively coordinated the enemy will discover that his OPs are neutralized, his personnel bunkers and weapons emplacements are destroyed and he is denied the opportunity to recon-



The tank gun has a long reach, can dominate terrain without physical possession.

struct these installations under cover of darkness. He is besieged by fire. He has the alternative of being destroyed on position or displacing to the rear. His decision is immaterial for the effect will be the same. It is impossible to maintain an organized battle position under these conditions.

During darkness the enemy is able to reinforce and resupply his beleaguered positions without the threat of observed fire. It is believed that decisive results can be achieved more quickly if this cover of darkness is removed. This may be accomplished by moving searchlights forward to specially designed bunkers on the MLR to permit direct illumination of selected target areas. Searchlights mounted on tanks are suitable for intermittent coverage in local sectors to illuminate close range targets or to frustrate enemy ground attack. By this measure the enemy is denied the opportunity to recover from the effect of our fire for with artificial illumination it can be delivered with equal accuracy during day or night.

When it becomes apparent that the enemy has withdrawn the bulk of his force from a besieged area we must begin the decisive phase of the operation—relentless pursuit by fire. The enemy must never be permitted to disengage. As his outposts are neutralized we must move forward to these positions with the observation scopes and our impregnable base of fire to engage at close range his MLR. This is the period for aggressive

probes into the neutralized areas. However, these areas must be carefully selected to insure that lucrative targets may be engaged. To reduce the possibility of prohibitive matériel losses due to antitank mines, high ground should be used to the maximum during this displacement forward. When necessary to cross an area believed to be mined, a safe lane should be cleared under cover of darkness and clearly marked with engineer tape or luminous objects so that it can be easily followed by the tank driver. This precaution combined with local trafficability studies by individual armor commanders should permit a certain degree of maneuverability.

Ground Campaign

Basically the ground campaign should be directed toward seizing neutralized areas to serve as forward firing positions. The objectives must be selected with due consideration for trafficability and fields of fire into target zone.

Seizure of these designated objectives by infantry should be accomplished just prior to first light. In this way we avoid the hazard of assaulting under observed enemy artillery and mortar fire. Likewise it is believed the enemy will outpost these exposed positions only at night and will ordinarily withdraw these security forces to permit their return to enemy MLR under cover of darkness. By proper timing it is probable that many areas will be unoccupied by the

enemy at the time of the assault.

During daylight hours preceding the attack, tanks positioned on the MLR register both offensive and defensive fire on critical portions of the objective. The firing data is recorded and a concentration number assigned to permit accurate fire during hours of darkness or periods of restricted visibility. The infantry commander should maintain radio contact with the armor commander throughout the operation. If the objective is believed to be occupied the infantry commander should call for preregistered tank fire as he begins the assault.

In planning these infantry operations, we must not ignore the possibility that the enemy will have previously withdrawn the bulk of his force from effective range of our weapons, leaving only a small holding force on position. He would rely on these to give him sufficient time to reinforce the forward areas by using his elaborate system of communications trenches. We can counteract these tactics by placing assault type fire on widely separated target areas. Numerous feints utilizing assault fire over an extended area will tend to frustrate enemy plans. By proper coordination of tank fire and infantry assault we can insure that the objective will have been seized before the enemy can react. Concurrently with the delivery of tank assault fire on the forward slope, a fire block should be established to the rear of the objective to prevent reinforcement during the attack. This may be achieved

by preregistration of tank weapons to permit direct fire into communication trenches. If required, additional tanks may be moved forward into prepared positions on the MLR to execute these interdiction missions. Ordinarily, however, a sufficient number of tanks should be able to place fire on these limited objectives to permit the simultaneous execution of both the interdiction and the assault fire missions. Tanks occupying positions overwatching infantry routes of attack should be used to deliver assault fire while tanks occupying flanking positions deliver interdiction fire. The artillery, mortars and M16s add depth and insure a continuous barrier while M19s can be employed to place direct preregistered 40mm cannon fire throughout trench network. Thus the objective is isolated by fire. While tanks are engaging known targets on the forward slope of the objective, the remainder of available weapons maintain a fire block to rear of the beleaguered position.

A fire plan of this type in which tanks only are employed against the forward slope of the objective, permits the infantry to attack a position under assault fire by these flat trajectory weapons with comparative safety. The capabilities of the tank gun, particularly when delivering assault fire from dominating terrain down on the objective, permits an accuracy not possible with any other weapon at comparable range. This technique of tank assault fire should be fully

exploited during this phase.

To decrease the possibility of causing casualties among the assault elements, the same type ammunition should be used for registration and assault fire with the exception that HE and WP may be used interchangeably.

Since the infantry commander is in radio contact with the armor commander and all tanks in the sector are operating on the same frequency, the assault fire may be adjusted or shifted at will. Prearranged visual signals may be used in case of radio failure.

Having secured the forward firing area, the infantry should deploy and dig in to minimize the effect of enemy counterfire. When this has been accomplished, tanks should move forward to infantry secured firing positions. Tanks on the MLR remain in position to neutralize enemy OPs, reinforce forward fire and deliver preregistered defensive fire on call of the infantry commander.

If the forward position offers particularly profitable targets, an uninterrupted volume of fire may be maintained into the target zone by organizing a shuttle system in which either platoons or individual tanks alternate between supply point and firing area. The duration of such an arrangement and the rate of fire is determined by the importance and extent of the target area.

Infantry assault should be reserved to seize defensible, strategically located terrain exposing profitable target zones. However, once an objective has been occupied by friendly troops, tanks must remain on position to assist in its defense. If available, it is advisable to include tanks equipped with searchlights in defense of these forward areas exposed to enemy ground attack. They should move to forward position just prior to darkness and be integrated into the defensive perimeter.

In support of daylight infantry attacks against strongly held positions we must be prepared to provide a maneuvering element. A maximum of one half the supporting tank force should be utilized in this role. We must consider that the fire power of these tanks will be neutralized over extended periods of time while traversing difficult terrain or when masked by intervening obstacles.



Skyline positions place a burden on enemy antitank gunners using direct fire.

Therefore, the stationary base of fire must be adequate in itself to dominate the objective, while the maneuvering element capitalizes on the shock effect and close support capabilities of the tank.

In securing indefensible isolated areas for use as daylight firing positions only, and against which enemy daylight assault is not likely, the following method may be used. Tank-infantry coordination during the assault phase is basically the same. However, instead of remaining on position, the infantry, having searched the area, return to the MLR just prior to first light. The tanks move into firing positions unaccompanied by infantry troops.

A primary consideration when conducting this phase of the operation must be to expose our infantry troops to enemy counterfire only when unavoidable. Ordinarily, under these conditions infantry should not move forward with tanks. If enemy troops are likely to intercept tanks between the MLR and forward firing position, friendly infantry overwatching the route from strategic terrain within effective supporting range plus the overwatching tank support from the MLR should prove adequate.

Tanks must bear the brunt of this operation for they are ideally suited to wage this critical battle of tactical attrition. Operating from properly selected terrain, armed with the decisive weapon, they remain the one instrument of ground combat which the enemy is incapable of neutralizing.

Enemy Countermeasures

Initially the enemy will attempt to neutralize tank fire by mass employment of artillery and mortar directed on individual positions. This type fire is not effective when employed against armored vehicles. To counteract this measure we need only rely on the training and courage of our crews to execute missions without regard for ineffectual enemy counterfire.

Since armor attracts armor it seems likely that the enemy will commit limited numbers of tanks and self-propelled artillery to engage us with direct fire. This is doomed to failure. By utilizing more powerful instruments of observation plus artillery ground and air OPs, we are able to

adjust accurately against enemy firing positions. If the enemy vehicle is positioned beyond effective range of APC ammunition, White Phosphorus adjusted with a 20 power scope will either set fire to his tank or will serve as an easily identifiable target marking for destruction by friendly air. In most cases, enemy armored vehicles lured forward by this operation will be destroyed from the air before they arrive at a forward firing position.

Following this failure the enemy may dispatch tank hunter teams under cover of darkness, armed with rocket launchers and antitank grenades, to destroy tanks in firing positions. By installing barbed wire, anti-personnel mines and trip flares in depth well forward of our positions, we can frustrate enemy efforts to approach positions undetected. These passive measures, combined with alert guards operating tank-mounted searchlights and tank weapons should be sufficient to neutralize such raids. During the later phase of this period, when it becomes apparent that he cannot succeed with relatively large groups operating against our MLR, the enemy will probably resort to infiltration tactics to penetrate our lines. These small groups will have the mission of laying antitank mines behind the MLR and in the vicinity of firing positions. Some, armed with AT grenades, will attempt to destroy the tanks and crews in reserve areas and on the MLR. Since during this phase the operation is to be conducted from the relative security of our MLR, this type counteraction, conducted by small uncoordinated groups, can accomplish little more than harassment. This phase is likely to yield many prisoners—both those thwarted in the accomplishment of their mission and individuals anxious to escape the effect of our fire.

Enemy air power, so far uncommitted over the battle positions, while being our most powerful threat, is unlikely to prove an effective countermeasure. Passive defensive measures such as camouflage, cover and concealment, reinforced firing positions and proper dispersion tend to neutralize the effect of air attack. These measures combined with the strength of our antiaircraft defense, the efficiency of our radar interception, and

the presence of our own planes over the positions, tend to counteract the threat of effective intervention by enemy air.

Organization

This operation can be successfully conducted with armor presently available. The three line companies in the tank battalion organic to each infantry division should be placed in direct support of the infantry regiments. Both the regimental tank company and the company from the tank battalion should be employed on the regimental front simultaneously. Rather than an arbitrary equal division of the regimental sector, the zone of responsibility allotted to each company should be based on the number of tanks required to dominate a specified target area.

By this simultaneous employment both companies are permitted to retain a local reserve to be used in case of enemy attack, to execute missions in forward firing positions, or to relieve front-line platoons for maintenance and rehabilitation. In this way pressure can be exerted against the enemy for an extended period of time.

Since the company occupies less frontage, close tactical supervision is assured.

The burdens of supply and communications are eased since the specialized personnel, equipment and transportation of two tank companies are available for use in the regimental sector.

The regimental commander is assured of having a reserve element from his organic tank company at his disposal at all times to execute special missions which he may direct.

The tank battalion commander and staff are available to plan, coordinate and supervise the employment of armor in the division sector. This group, operating under the supervision of the Corps Armor Officer, should prove an effective means of coordination during the operation.

Committed aggressively and employed imaginatively, the tank, in coordination with other arms, is capable of inflicting such prohibitive losses that the enemy cannot maintain his present battle positions in Korea. By proper application of the principle of *mobility of fire* we can restore *mobility of maneuver* to this theater of operations.

Creation of the post of Corps Armored Officer came at about the same moment as the outbreak of the Korean war—and with an equal degree of surprise for several officers who drew the initial assignments to the new post and gave it the battlefield baptism. One of those who “was” comes up with some guidance

For the Potential Corps Armored Officer

MANY times during his career an Army officer is assigned to a responsible position although lacking the technical knowledge for the job. If he is ambitious, alert and has pride in his accomplishments, he will turn to the proper manuals for guidance. He will seek out the advice of his superiors, who have served in similar positions.

But, when he is assigned to a newly created position for which there are no written material or experienced officers available, he must trot out his ingenuity and plain common sense.

As a prelude to shipping out for Korea as a Corps Armored Officer, I remember gathering my material and leaving the classroom at Fort Benning late one morning in the summer of 1950 after trying to sell the concept of employing armored personnel carriers to a class of field grade infantrymen. Dropping my instructor paraphernalia in a pile, I called the phone number noted on my desk and there it was—PCS orders to a new Corps forming at Fort Bragg and preparing to ship out for Korea immediately. The MOS in the orders read 2162, so I thought my new job would be as an assistant G3, but this was not to be the case. When I reported into Fort Bragg four days later, I found a building full of packing crates and was told we were leaving for the POE in 3 days. “Incidentally,” the assistant AG said, “you’re the Armored Officer and the first member of the new Armored Section to report in. See Colonel _____ and find out what equipment he has gathered for your section.” I did and luckily encountered a real soldier and gentleman who had realized that the Chief of the new Armored

Section wouldn’t arrive in time to handle his equipment and had secured some office and administrative equipment for me. The section had two packing crates of paper, 4 folding chairs, one typewriter, a field desk, the FM’s and TM’s I had brought from Benning, and my cigar box of assorted grease pencils. Needless to say, it was quite an auspicious beginning. Two officers and 4 EM reported in time to fill up the section T/O and we were en route to Korea. We were faced with jobs for which we had received no training and tried to find something in the manuals about the function of an Armored Section. Don’t try for there’s nothing there. FM 101-5 covers everything except the janitor—and the Armored Officer. I soon found out that the rest of the staff knew less about it than I (or so it seemed to me), so I gathered the small Armored clan of Executive and Armored Supply officers together and got their opinions. Since we had a supply officer, we had a lead on part of the job. I spent my waking hours at sea preparing a memorandum outlining the duties of the Armored section. If the Chief of Staff would publish it, we would have an operating directive and could meet new problems as they arose. The big problem was to get recognition and cooperation from the rest of the staff for a new and heretofore unknown section. We did, however, obtain the necessary concurrences and the memorandum was published, establishing the activities of the Armored Section. When IX and I Corps switched commanders our old CG carried all of his chiefs to IX Corps and gave us the identical jobs that we had held previously, then

the memo was republished for IX Corps. There was many a reason to be thankful that I had done so when I left that job in Korea on 7 Nov 51—15 months and 3 Corps Commanders later. The memorandum is included here just as originally published:

ACTIVITIES OF ARMORED SECTION

MEMORANDUM

1. The duties and activities of the corps Armored Section are not enumerated in FM 101-5. This memorandum is published to orient the General and Special Staff Sections _____ Corps with the activities of the Armored Section.

2. The Armored Section is placed under AC of S G-3 for administrative convenience and general staff co-ordination.

3. The Armored Officer:

a. Has operational control of all armored units (except armored divisions) not assigned or attached to subordinate commands.

b. Advises the corps commander and staff on all matters pertaining to armor.

c. Coordinates the corps anti-tank defense plan.

d. Determines the requirements for the types of armored units and makes recommendations for their employment.

e. Makes recommendations for the size, composition and employment of the corps armor reserve.

f. Keeps current record of the status of armored vehicles and material. Renders appropriate reports to higher headquarters.

g. Makes recommendations for the employment of armor and supervises the preparation of detailed plans to include the paragraphs of the operation order pertaining to armor.

h. Advises the corps commander on the use of tanks in the role of indirect fire.

i. Studies and evaluates enemy armored capabilities (coordination with AC of S, G-2).

j. Collects and evaluates information

of enemy armor (in coordination with AC of S, G-2 and Ordnance Officer) including technical information of enemy armored vehicles.

k. Recommends the allocation of replacement tanks and other armored vehicles and all armored material, ammunition, fuel in short or critical supply (coordination with G-3 and G-4).

l. Keeps a record of the current status of battlefield recovery of armored equipment (coordination with Ordnance Officer).

m. Recommends action such as training programs to improve the efficiency of armored units organic to or attached to the divisions of the corps.

n. Prepares and supervises training programs of the armored units under his operational control and exercises technical supervision over armored training throughout the command.

o. Provides an armored officer to serve on all planning groups.

p. Makes recommendations for the employment of mechanized flame throwers (in conjunction with the Chemical Officer):

BY DIRECTION OF THE CHIEF OF STAFF:

Operational Control

At first glance our ambitious gesture of not assuming operational control of the Armored Divisions seems ludicrous in light of Korean events; but the memorandum was written while we were at sea with no knowledge of high level plans. At some time during the period from 6 Sep 50 to 7 Nov 51, the Armored Section had at least one problem under each of those categories. Many, of course, became continuous.

You will notice that we had the Armored Officer "Advise the Corps Commander on the use of tanks in the role of indirect fire." Naturally, my advice was against indirect fire by tanks but by making this a function of the Armored Officer, it pulled the teeth from attempts by Artillery Officers to get the tanks attached to the artillery for indirect fire missions. On one occasion an ambitious Artillery Officer had a tank company firing indirect before I got the word; even the CG got the word before I did. That should *never* happen. My objections to tanks firing indirect were the wearing out of gun tubes, the relative inaccuracy of the fire, the difficulty of observing and controlling it, the effect of reducing the tank's desire to overrun his enemy, and the increase in the idea of using only the gun power of the tanks. Unfortunately terrain, habit, and lack

of previous experience by many tankers in using tanks in the assault had a bad effect on the tank's assault role in Korea. It has even caused FEC personnel officers to give tankers a lower rotation point score per month than the infantry. As a proud ex-Armored Division Tanker in W W II, I had to hide my shame at seeing tankers put in the category of supporting weapon operators. Yet, direct or indirect fire, if all the tanks do is shoot, they are not being used for any purpose except as support weapons.

A high priority project is to coordinate the corps antitank defense plan. This ties in very closely with "studies and evaluates enemy armored capabilities." When we in the IX Corps first became operational, the NK's had an operating tank division—the 105th. The Armored Section followed the career of this unit closely from that day on as well as other enemy armored units as quickly as they were identified. The section must maintain a map depicting routes of approach for enemy armor and enemy armor sightings. We worked closely with G2 and whenever the armor sightings, PW reports, and other collecting media indicated, we prepared an Estimate of the enemy armored capabilities that G2 published as an annex to his periodic intelligence report. It could also have been issued as an annex to the Intelligence Annex of an operation order.

Once again we were faced with lack of precedent. The format for an Intelligence Estimate in 101-5 was used for the first of these Estimates of enemy armored capabilities. However, it was found to be inapplicable, so we prepared our own. This is the form we used continuously after January 51:

Issuing HQ
Location
Date time group

ENEMY ARMORED CAPABILITIES

Map: Korea 1:250,000 and 1:50,000

1. ROUTES OF APPROACH

- List Routes
- Describe routes enumerating critical points and key terrain along each.

2. WEATHER

Include weather forecast and how it will affect soil trafficability, depth of fords, etc.

3. ENEMY TANK SIGHTINGS

Include location, number, date and

types of enemy armor sighted in tabular form.

4. IDENTIFICATIONS

Identify units and types of armored vehicles. Types identified are very important in the event the enemy has an uncommitted tank better in quality than friendly tanks.

5. ENEMY ARMOR RESERVES

Describe enemy armor reserves capable of intervening and replacement tank availability.

6. ENEMY ARMORED CAPABILITIES

Enumerate

7. DISCUSSION

8. EFFECT OF ENEMY ARMORED CAPABILITIES ON OUR MISSION

s/_____
Armored Officer

1 Incl:

Technical Report on MK86

(This report should be included whenever new types of enemy armored vehicles are identified and should give the characteristics, armament, speed, maneuverability, weight, etc., of the vehicle and any "best methods" of combatting it w/friendly armor)

Tank Allocations

One of our biggest jobs was securing the allocations for and coordinating the delivery of replacement tanks. We got information from EUSAK Armored Section on numbers, shipments, etc., and coordinated allocation and pickup by the units. Ordinarily we merely recommended the allocation of tanks to divisions but on one occasion had to recommend allocations right down to units within a division. This was necessary in order to see that the few available tanks were used to best advantage. In this division it was a fight between the division tank battalion and the regimental tank companies and we were the referees. However, this situation is to be avoided if at all possible.

Battlefield recovery was quite a problem but has already been covered in several previous editions of ARMOR. Let me, however, call your attention to your training role. One way to prepare for a special operation or to improve the training status of a unit is to establish a Tank Training Center under Corps Control. Your operational control clause gives you authority to establish these centers and you can do some effective indoctrination, as well as replacement and all around crew training there. However, based on experience, the operational control part of the direc-

tive should be changed to "commands all non-divisional armored units assigned or attached to the Corps." This will give you administrative as well as operational control of the units. It's hard to distinguish between the two and bad feeling can result if you are not careful. You need command authority.

Be sure to have yourself included as one of the Tactical Planners in the Corps Headquarters. If G3 sets up a special planning group, the Armored Officer must be represented. This is self-evident; but you may have a fight to get the right. No one likes an advisor. You have to be a diplomat in this situation as well as almost all others to accomplish anything.

So far I've discussed only those points covered in our initial directive. Others can be added to the list now as a result of experience. The first that should be added is:

"Monitors personnel assignments to all armored units and allocates critical specialists and MOS's where critical shortages exist."

Training

Other important points are:

"Arranges for specialist training and special schools to alleviate shortages in critical MOS's.

"Maintains a tank trafficability map of the corps area of operation and the projected area of operation to show the maximum size tank unit that can be employed in each terrain area."

This is not merely a map and engineer road report study. It involves covering *every* area in the corps zone yourself in a ¼ ton truck or tank, and flying in a light plane over the enemy-held projected area of operation to see what information you can obtain on tank trafficability. This information can be reduced to a tinted and overprinted map, using different colors to represent the maximum size tank unit that can maneuver in each area. We used red for impassable areas (mountains, etc.), green for platoon size areas, orange for company size areas, and blue for companies to unlimited. In many defensive situations, roads and mountain passes were widened to permit tanks to be used in pre-planned counterattacks. The same principle applied for the attack. Engineers followed

the infantry and widened passes that enabled the tanks to join and support the infantry. This type of information and road widths, bridge capacities, fording sites, etc., should all be included as overprinted information on the trafficability map. One of the best methods of securing general distribution of this information was to have the completed overprinted map issued as an annex to the G2 PIR. The basic distribution of sending copies direct to all armored units made sure that they got the information; but we also wanted the infantry regiment and division staffs to use it. When the studies first began, division reconnaissance companies and tank battalion reconnaissance platoons were used extensively to gather road information. We later had a working agreement with all armored units to send us information, and traded information with the other Corps when either one needed it. However, the Armored Officer personally answers to the Corps Commander if he should report an area as not suitable for tank employment and events show it to be to the contrary. Also the CG would not appreciate advice that resulted in bogging down a large group of tanks in quicksand on the Nakdong or in a rice paddy. Verify your data before you stick your neck out on a trafficability map!

There are many unforeseeable jobs that you will be called upon to perform; such as delivering critical spare parts in a ¼ ton trailer from one tank unit to another in order to get tanks off deadline, investigating alleged malpractices of all types, submitting daily maintenance and operational status reports to Army Armor, instructing infantry in use of armored half-tracks (provisional armored infantry), supervising rail loadings and unloadings, and above all—trying to help the *fighting* tanker in any and every possible way. We ran a way station for tank crews, tank officers, etc. Anyone in Armor was welcomed into the Armor Section and his problem was solved if we had the means.

To save yourself grief, get a tank radio (SCR508 at present) mounted in your ¼ ton and listen in on the frequencies of the units in whose area you are visiting. You can get a good picture of the situation in this fashion and you can use the radio

for control when you are called upon to conduct rehearsals for special operations. It also comes in handy in coordinating tank support for a UN or ROK unit that is using tanks for the first time or where a coordinator is needed. In addition, listening in may save your neck when searching for some isolated tank platoon along the front. I once had the dubious pleasure of giving two soldiers a ride back down a road on one of these hunts only to be told that they had been sent to look for mines on that road I came in on but since I made it they guessed there weren't any mines. Remember the combat situation may have changed (during periods of movement fore or aft) since you left the CP, so listen. Also establish a callword for yourself that each tank unit will recognize on the radio. That eliminates this unknown station routine if you want to communicate with someone in a hurry. You also need the radio as a command vehicle in those situations where you are used as a Task Force Commander.

Know the Situation

The only way to know the armored situation is to travel and visit the units yourself. Don't create the impression of being a snooper or an inspector but rather become the helping hand. The tankers soon learn whether your visits result in any positive return for the trouble you cause in being fed and sheltered for the night. If you don't accomplish something your welcome will wear out fast. During these visits you will become the unofficial confidant of most of the tankers. You will soon learn the tank knowledge of the various infantry commanders, the tanker's problems with supporting ordnance, personnel and equipment problems, and a mass of other facts and opinions.

As stated in the beginning, there were no books or manual references for a Corps Armored Officer then and I have seen none since. Someday the Armored School may start teaching the duties of the Corps and Army Armored Officers and someone might have these duties incorporated in 101-5. Until then a gap exists in our service school curriculum and manuals for training officers for responsible jobs in branch assignment.

OFFENSE is a Word . . .

by COLONEL JOHN D. BYRNE

THE military terms used by the Army affect its offensive spirit. The United States, with its traditional aversion to things military, finds it difficult to assume the bearing of a "strong man armed." Our new Army terms, or their abbreviations, often contain an unmilitary second meaning—one that offends the ear or gives an unpleasant, even defeatist, tone. For instance, alphabetese shortens Mobile Army Surgical Hospital to MASH, a set of initials with a most unmedical connotation. And in national emergencies, when Army talk changes and grows most rapidly, new ideas or things are very apt to get derisive slang epithets tied to them. It is only natural for conscripts, however loyal and brave, to be satiric about their temporary Army associations. Furthermore, our numerous and energetic journalists not only parrot the conscripts but also dream up bookfuls of new words. Neither soldier slang nor the slant of a newspaper story is likely to concern itself primarily with the Army's offensive spirit!

The Army, therefore, with its offensive mission in mind, must colorfully name its weapons, equipment, and isms during design and planning stages.

Consider, for example, the naming of the "Launcher, Rocket, 2.36-in." As everyone knows, this officialese was immediately translated by the

The Army has long been sensitive to the variety of labels which have a negative connotation in the business of soldiering. And it has focused much attention on the terminology on the positive side as well. But our author feels that we must have some careful planning in the word game to avoid the pitfalls inspired by satire and slang—in order to insure that terms bear the trade-mark of "offense" rather than "offensive"



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soldiers to "bazooka." Now "bazooka" may supply needed comic relief to a battle-tough veteran with a Big Red One on his shoulder; but what does it do for a reenforcement spending his first night in combat? Wouldn't it be better to call this weapon the Rattlesnake? Such a name would teach and reassure the soldier that the weapon, used from concealment at short range, is poison.

I advocate no ban on soldier humor. But while the warrior's chuckle may

Illustrations by Lt. Col. E. W. Jacunski

be grim, it must be optimistic. The Army can talk more aggressively, more colorfully, and still retain its funnybone.

As a matter of fact, many of our weapons now have offense-minded names. We have the Walker Bulldog tank, the Eager Beaver cargo truck, the Weasel cross-country vehicle. The new jet fighters have very combative names: Sabrejet, Thunderjet, Pantherjet, Cutlass.

A tough old soldier may squawk that this giving of names to our military tools is juvenile. Perhaps it is; but it is also the base for an important practice—the naming of ideas. I cannot prove that it will make the soldier more efficient to call his rifle the Jesse James or his jeep the Ben Hur. But surely the naming of *things* will alert us to the more careful naming of *ideas*.

The world-famous user of fighting names is the British Royal Navy. Her ships carry such names as Golden Hind, Victory, Bellerophon, Conqueror, Formidable, Revenge, Furious, Warrior, Royal Sovereign, Eagle, Iron Duke, Dreadnought, etc. That the British apply this principle to the naming of ideas is clear from the writing of the "former naval person" who said that "operations in which a large number of men may lose their lives" should receive code-names neither "boastful and overconfident" nor "despondent" nor "frivolous." And he goes on to rule out such abstract weaklings as Triumphant, Woebetide, and Bunnyhug.

Americans are lucky in their vast heritage of fighting names. All of us are familiar with the lore of the



cowboy and with the settings of our Western novels, stories, and movies. The best names from this source are the Indian ones: Apache, Cheyenne, Kickapoo, Sitting Bull, Crazy Horse, Medicine Man, Cochise, etc. From the cowboy's open range come the names of the native wild animals: Grizzly Bear, Copperhead, Wolverine, Badger, Wild Boar, Armadillo; Timber Wolf, Cougar, Bobcat, Diamond Back, etc. Mixed with all these are the romantic people and places of the Wild West: Longhorn, Owlhoot Trail, Pinto, Last Chance, Lone Star, Calamity Jane, Poker Flat, Pecos, Tonto Rim, Staked Plains, the Panhandle, etc. And the West brings to mind all of American history and legend: Paul Bunyan, Headless Horseman, Puritan, Salem Witch, Knickerbocker, Eldorado, Leatherstocking, Railsplitter, Davy Crockett, Bowie, Casey Jones, Rough Rider,

Stonewall, Black Jack, Valley Forge, Adirondack, Buccaneer, Yellowstone, Yosemite, Cassino, Bataan, etc.

If these sources aren't enough, there remain the names of the Old World and of mythology: Ajax, Centurion, Prometheus, Agamemnon, Vulcan, Gladiator, Calliope, Titan, Jupiter, Thor, Orestes, Minotaur, Triton, Pandora, Centaur, Aurora, Cassandra, Beowulf, Falstaff, Genghis Khan, Attila, Orpheus, etc.

The naming of things is easy; but what about ideas? And here we can look back at the development of phrases that most of us now consider harmful. When we think of the first appearance of these phrases, we may find that we helped to invent them. Here are a few examples:

a. *The Brass*, for officer leadership.

During World War II, Kipling's phrase "gilt ornamentation of his [the naval officer's] cap" came into overuse

THE AUTHOR'S TABLE OF SUGGESTED NAMES

Item	Proposed Name
Anti-personnel Mine	Gila Monster
Rifle, Recoilless, 75mm	War Arrow
Mortar, 4.2-in.	Thunder Jug
Gun, Antiaircraft, 40mm, twin	Kingbird
Machine Gun, Multiple, cal. .50	Flycatcher
Howitzer, 105mm	Vulcan
Howitzer, 240mm	Little John
Gun, 280mm	Thor
Car, Armored, Utility, M20	Calamity Jane
Motorcycle, Solo	Traveller
Tank, Light, M24	Apache Chief
Tank, Medium, M45	Crazy Horse
Tank, Heavy, M26	Grizzly Bear
Truck, 3/4-Ton, Ambulance	Florence Nightingale
Armored Infantry Personnel Carrier	Centaur
4.5-in. Rocket Launcher, Multiple, T-66	Calliope
Flame Thrower	Beelzebub
Tactical A-Bomb	Big Brother
81mm Mortar	Tax Collector

as "the brass." Originally "the brass" was a pleasant joke; but it became derisive as the war failed to develop a fairy-story ending. We can't throw such words out of the language, we can only plug more optimistic synonyms.

b. *Arty* as an abbreviation for artillery.

Arty conjures up a being in smock and beret, not guns and cannoneers.

c. *Armor* for Cavalry.

Armor, a translation of the German Panzer, carries the glamour of the blitzkrieg, but only to the professional soldier. For the recruit, *Armor* focuses attention on the least important part of the tank. The Army gets from this word the additional job of teaching the recruit that *Armor* really means mobility, shock, and firepower. If this seems far-fetched to you, recall the fate of the armored knight. His horse fell to the longbow, and he himself, helpless on the ground in his steel suit, could have died from the knife of a mere goatsherd.

d. *Ground* (often with a small

"g") for Army.

In a military sense, there is an inherent lack of mobility and life in the word *Ground*.

e. *Support* as part of the definition of the tactical mission of a combat unit.

Support is a double-edged word. It means "do all that you can for the supported unit," but it can mean to the inexperienced soldier that support is his whole job.

f. *Group* for Regiment.

Group shows field officers that the unit can be broken up to fight in single battalions; Regiment shows the troops that the unit cannot be broken up by the enemy.

g. *Replacement* for reenforcement. Now happily changed.

h. *Caste system* for officer-man relationship.

No comment.

i. Umpteen names for soldier, or the conscript citizen-at-arms.

Both the conscript in battle and the newspaper reader must have a simple word to picture the man who fights

it out hand to hand in the mud. In the case of the famous Rangers, a special name solves the problem for a few units. But such a special name almost forces the "ordinary" soldier to define for himself a lower standard of duty. That is, the "ordinary" soldier is encouraged to say to himself, "I'm just a GI; they can't expect me to measure up to those specially selected and trained men." Yet the "ordinary" soldier is the heart of our people; he is the conscript citizen-at-arms.

The word we want is soldier. But perhaps it is already gone from the vocabulary of the American, who insists on the new and novel.

The whole problem of naming military ideas is bound up in the naming of the soldier himself. This lack of a name fathers, for example, such unfortunate figures for the selection of fighters as "scraping the bottom of the manpower barrel."

For the good of both the soldier and the Nation, the atmosphere of "GI" and its sister words must pass.

Although Korea is not a mobile war, Armor officers are gaining much experience.

What Can an Armor Officer Learn in Korea?

by MAJOR JOHN K. BRIER

THE assignment to a ZI or EUCOM armor unit of an Armor officer with Korean combat experience should cause the unit commander to wonder how much and what can Korea teach us? Officers have, in some cases, answered this question with a flat "Nothing—Korea is a special situation. Now you take my experience in World War II. . . ." Other officers are awed by the returnee from Korea—they think he is an authority on all phases of war.

What can an Armor officer learn in Korea while serving in a tank unit?

Combat in Korea requires the employment of all T/O&E authorized allowances. An Armor officer in Korea can acquire knowledge of what his unit is authorized and he can rediscover the unit's capabilities and limitations—the capabilities and limitations of men, of the organizational structure, and of the equipment.

* * *

An officer can learn about leadership in any assignment.

In the "Land of the Morning Calm" he is exposed to every leadership problem that haunts the conscientious soldier's mind. The boredom

of the sustained defense tends to create moodiness, restlessness, and meanness in the individual—things which must be controlled with firmness and tact. The firmness and tact must be constantly developed. In Korea the officer must fight an inner battle to keep himself mentally alert, ambitious, and interested in his work and the welfare of his men.

An officer here may well have opportunities to serve in positions normally calling for a rank one or two grades above his actual rank. Thus a man can determine for himself whether or not he has the ability to accept responsibility without hope of any reward (promotions are almost a thing of the past for Armor officers in Korea) other than the satisfaction that comes from a job well done.

The courage and efficiency of the American soldier have been recorded in many histories, but until an officer has seen those characteristics demonstrated in actual combat his loyalty to his men tends to be an automatic duty. In Korea, along the MLR and on patrols, an officer will see acts being performed that awaken within him a full respect and loyalty for his men. Likewise on the MLR and on patrols the officer can, by calm, cool leadership, gain confidence in himself—abolish forever from his mind the haunting question we all hear in training "Am I a combat leader worthy of the name?" The true test—combat—can be made in Korea.

He can learn the havoc wrought

by careless personnel management. A policy of treating all men as qualified tankers, regardless of their training and experience, is wasteful and intolerable. Maintenance men, communications men, and solid NCOs are to be coveted and carefully assigned—they don't grow on trees. One can learn how to plug leaks in the pipeline so as to put the right men in the right job.

In Korea the Armor officer can become familiar with the normal reports required from subordinate units. Not only may he become familiar with the techniques of completing the reports, but also he can learn where, when, and why these reports are used, and by whom.

He can study the various systems and standards used in awarding decorations. Over a period of time he can learn to evaluate heroism and the various degrees of bravery and devotion to duty. He can see for himself the advantages gained when exemplary conduct in battle is promptly and properly rewarded. He can learn the techniques involved in obtaining super-quick action on recommendations for decorations.

In Korea the Armor officer must learn to do his best to initiate a sound promotion policy for enlisted men.

* * *

The Korean veteran can develop a keen eye for targets and a keen respect for the capabilities of the enemy to camouflage his positions and move-

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ARMOR—January-February, 1953

ments. The veteran can become appreciative of the enemy's patience and stealth.

An Armor officer can acquire knowledge of enemy tactics and organization in Korea. The same organization and tactics, unfortunately, may confront him again for a number of years.

He can appreciate the difficulties involved in obtaining intelligence of the enemy—the CCF and NKPA soldiers are not easily taken prisoner, nor do they obligingly carry situation reports in their pockets when they get killed on patrols.

Knowledge of the enemy's capabilities is more important than a guess as to his intentions. This fact can be learned in Korea where the enemy continues to fight during bad weather, when short of supplies, or when some of his losses to his own artillery fire are inevitable. The Armor officer can evaluate the enemy's intelligence—he, whether CCF or NKPA, is far from stupid—and he is obedient.

The Armor officer in Kimland is exposed to opportunities for perfecting his map reading while spotting targets, directing artillery fire, conducting reconnaissance, and/or planning actions in front of the MLR.

Commissioned tank leaders can appreciate the value of security and secrecy. They can study enemy reaction to our thrusts—reaction occasionally so well timed that there can be no doubt of the fact that somehow there was a slip—the enemy deduced our plan in advance.

* * *

Do not throw the book out of the window. Study it! Granted that in many places in Korea tanks may not approach the objective from different directions (from the infantry); nor may they follow the infantry and pass through to lead as the two closely approach the objective; nor may they transport the infantry; nor may they advance with the infantry at all. However, the fifth and least desirable method of employment is normally a capability. Our manuals state that tanks in an overwatching role is the least desirable method of employment—but the manuals do *not* state that this method of employment is *undesirable*. In Korea Armor officers can learn to perfect this fifth method of employment.

We are members of a combined arms team. Yet we think, eat and sleep tanks and, with understandable human failing, may sometimes be inclined to look down our noses at the infantry and scorn the effectiveness of artillery. A tour in Korea can teach us valuable basic lessons. The infantry can hold ground much better than armor. Armor without infantry support is not too efficient (the reverse is also true). Artillery can protect armor's flanks; without displacing batteries, it can rapidly shift its devastating fires, to stem the enemy's reinforcing efforts while armor and infantry concentrate on the major effort (assisted by more artillery). In Korea it can be seen that there are times to have tanks lead the attack and then there are other times when another of the five methods of attack should be employed. A short tour with armor while it is in a supporting role can teach Armor officers the capabilities, and weaknesses, of the other arms. It can teach the Armor officer to be a salesman. It can teach him patience and humility.

Some Armor officers serve in straight infantry assignments in Korea—they are fortunate for they can assure themselves of success when, in the future, they command reinforced battalions or combat commands in the armored divisions. An Armor officer must have a working knowledge of infantry.

Korean service can teach Armor officers the value of careful planning and violent execution of armor attacks. Careful planning is forced upon armor in Korea, because our operations are mainly carried out in areas which the enemy has been defending for over a year, and because higher headquarters in Korea are aware of the impact of armor moves on our situation. The Armor officer in Korea can observe where success has come to those armor elements which, once launched into the attack, moved and fired with vigor, determination, and according to a simple and flexible plan. He can absorb the cold facts that timidity, indecision, and plain lack of guts can needlessly cost lives.

In Korea each Armor officer can, and must, learn more about his own branch. In his association with the infantry and artillery the Armor officer is called upon—at every conceiva-

ble level of command—to be an expert advisor on all armor matters.

The art of issuing mission type orders is not easily acquired. Yet it must be acquired. Within EUSAK an Armor officer can learn to reach a decision and issue mission type orders. Then he can, and should, learn to allow his subordinates time and room in which to exercise their imagination, initiative, and prerogatives of command, to accomplish the tasks assigned to them. Granted the Korean war situation does, in many cases, permit company commanders to actually do each tank commander's job for him. But Armor officers can and must learn to issue mission type orders and leave them as such. By so doing Armor officers learn patience and tank commanders and other subordinates learn to carry the loads they originally expected to carry. By so doing they learn to keep their minds focused on their primary missions.

By observing tactical operations the Armor officer can learn that the basic subjects (marching, gunnery, and communication) must be stressed over and over again. Ordinary tasks must be accomplished with precision and perfection automatically without recourse to time-consuming thought processes. Success in battle depends more on all individual soldiers doing ordinary work in a proper manner rather than on a few men doing the extraordinary.

An Armor officer in Korea can, and must, learn to train, retrain, and train again every single man in his unit. Rotation (wonderful as it is to the individual) is hard on the team. New teammates must be trained constantly. Old teammates must be trained for more responsible positions. Training must be continuous, and effective without any frills. An Armor officer in Korea can learn to teach the meat of basic subjects without loss of time and without fancy training aids.

* * *

In the sustained defense an Armor officer in Korea can learn to avail himself and his unit of an opportunity to utilize and study the logistical support established within and immediately behind an infantry division. He can see that there are several methods of furnishing logistical support to armor working with the infantry. He can learn to appreciate

and overcome an infantry regiment's reluctance to accept the responsibility for furnishing logistical support to those elements of the divisional tank battalion which are in support of a regiment over an extended period of time. Along this same line, the Armor officer can learn to plan and execute simple, flexible logistical plans to ensure adequate support during periods of flux—such as when armor units are being shifted from a reserve role to an active role and vice versa. He can learn to overcome the temptation to become entangled in involved and complicated logistical plans that fit the sustained defense alone—plans which tend to stretch out transportation over unreasonable distances while still under the tank battalion supply platoon leader's control.

He can learn the importance of good work relations with all supporting technical services, especially the ordnance, engineers, and quartermaster. Armor's amazingly low deadline rate in Korea is an indication of the fine support being furnished by ordnance—in particular by the ordnance supply personnel. The presence of a goodly number of tanks, with well fed and equipped crews, well forward where they have excellent fields of fire, is evidence of the capabilities of our engineers and quartermasters. Armor officers in Korea can easily learn how dependent armor is on the supporting technical services and how much those technical services can accomplish.

Automotive

Mountainous terrain is hard on vehicles. In this part of Asia the Armor officer can discover the capabilities—many of which were never dreamed of—and limitations of his vehicles. Weak parts in our vehicles, which require constant care, are all too apparent. The importance of a smooth flow of replacement parts is impressed on the minds of most EUSAK Armor officers. The importance of proper driver training and first echelon maintenance is also self-evident. In Korea there is ample opportunity to become thoroughly versed in field expedients.

Communications

Working closely with the infantry and artillery, and at times the Air Force, can teach the Armor officer

in Korea the means of communications available within an infantry division. Enemy mortar and artillery fire cutting wire lines can impress upon Armor officers the requirement for multiple means of communications. With adequate communications we can retain adequate control of both our fire and our movement. But once communication control is lost then the bottom will fall out of the most well laid plans.

The knowledge that an Armor officer can gain concerning tank-infantry teamwork is among the most valuable lessons available in Korea and that teamwork is usually just as efficient, or just as weak, as the tank-infantry communications in effect within the division.

Gunnery

To defeat the enemy thrusts in Korea requires detailed knowledge of the weapons in the hands of armor, infantry, artillery, and the Air Force. Ammunition resupply is a critical problem. Therefore, it follows that the proper weapon must be used on each target. First round hits are essential. The remunerative targets an Armor officer sees in Korea are generally fleeting targets. Once he has seen the infantry and artillery decimate attacking troops with our final protective fires the Armor officer in Korea is bound to learn to appreciate supporting fires. He also learns the types and effectiveness of enemy weapons.

In training replacements the Armor officer in Korea can learn that advanced tank gunnery is most readily absorbed by those tankers who have mastered basic tank gunnery. He can learn the importance of teamwork within the tank crew and the importance of each tanker being able to assume the duties of tank commander, gunner, or loader at a moment's notice.

He can learn the importance of rationing his ammunition—making the best use of each round and each weapon to obtain the maximum number of kills during every shoot.

In Special Assignments

Not all Armor officers in Korea serve with armor units. Yet those officers can learn while in Korea. They are usually in staff positions where they must learn staff work. They can

become thoroughly conversant with the principle of completed staff work. They should be able to readily detect the horrible results of half-baked plans. They should absorb some knowledge of the functions of every staff section in the headquarters to which they are assigned—this knowledge comes to the staff officer who seeks the information rather than to the staff officer who allows himself to become boxed in his own little field. That staff work can, and should, be geared to assist the commander in his efforts to help the troops accomplish their mission is readily apparent to the staff officer serving in this combat zone.

An Armor officer not assigned to an armor unit while serving in Korea can still learn many of the lessons outlined in the body of this article if he will open his eyes and ears and get on the road to observe and absorb the contributions of armor in action.

Some Deficiencies

Lest it appear that the Armor officer whose service in Korea dates between June 1951 and the present, knows it all, the following are offered as candid observations. The average Armor officer in Korea learns little about proper camouflage (unexplainable enemy reaction makes the Korean veteran scornful of advice to stay off skylines, for example), map reading, march discipline, or marching. He is usually unfamiliar with the characteristics of good assembly areas and attack positions. He generally knows little about the requirement for dispersion and local security in rear areas. He has little opportunity to practice or learn about firing tank machine guns while moving. He is seldom exposed to the problems of the rapid marrying up of tank-infantry teams, mobile warfare involving more than ten tanks at once, or logistical support in fluid situations.

Summary

The Armor officer with experience in Korean combat has been exposed to war. His knowledge of warfare is perhaps great but certainly not infinite. An understanding of what he knows and what can be learned in Korea, should help Zone of the Interior and EUCOM armor units' plans for capitalizing on that officer's experience.

ARMOR NOTES

Centurion Tank Contract

The United States has placed an order with the British government for Centurion Mark III tanks which will be made available for defense of NATO countries under the U. S. Mutual Security Program, it was announced recently by the Department of Defense.

The contract for Centurions was placed in London by the U. S. Army Ordnance Corps as Off-Shore Procurement (OSP) under the American Mutual Defense Assistance Program.

Under the terms of the contract, the United Kingdom will produce tanks, plus fuel trailers, spare parts, and ammunition at a cost slightly less than \$90 million.

The tanks eventually will go to The Netherlands and Denmark for use by armies of those two countries in the joint North Atlantic Treaty defense effort.

The order for Centurion 50-ton heavy tanks, now standard equipment with the British Army in Korea, will involve 107 separate British concerns including Royal Ordnance Factories. Practically all sections of the British engineering industry will be contributing to the completion of the contract.

The United States Congress appropriated \$3,128,224,750 for military aid to Europe in FY 53. The bulk of this aid is provided participating countries in the form of American produced

equipment, and supplies. The remainder comprises material to be produced abroad and bought with United States aid funds and known as OSP.

Total contracts placed in Western Europe under the FY '52 Off-Shore Procurement Program and other Defense purchases of end items for the use of United States forces in Europe totalled \$729 million, of which approximately \$75 million was spent in Great Britain.

Under the Off-Shore Procurement Program, contracts placed in the United Kingdom and other European countries have a threefold purpose: 1) supplying arms and equipment for the defense of the NATO countries; 2) building up Western Europe's productive capacity, and 3) bolstering Western European economy.

In a statement issued in London, Brigadier General Daniel F. Callahan, Chief, Military Assistance Advisory Group/United Kingdom, said:

"The Centurion contract is the biggest single American OSP order we have placed to date in any country. The sum involved is larger than the total amount of OSP contracts placed in the United Kingdom under the Off-Shore Procurement Program during FY 1952.

"This example of American aid financing construction of British equipment for other NATO countries is a

perfect symbol of the truly united effort we are making for defense of the free world."

New Tank Modification Plant

Plans for construction of a Tank Modification Plant at Newark, Delaware, were announced recently by the Department of the Army.

The new plant, being built at a cost of \$3,100,000, will be operated by the Chrysler Corporation and will employ 400 persons. It will become an integral part of the Chrysler Delaware Tank Plant where the Patton 48 is in production. The Army anticipates that it will be in initial operation by April 1, 1953, and in full operation by July 1, 1953.

The Army said the new plant will be used for making final installation of on-vehicle-equipment and any modifications which may be required on all tanks produced in the Delaware Tank Plant. It was also explained that the new tank plant facility will be used to prepare tanks for shipment in such condition as to be ready for immediate use in the field.

Time Saver

Two devices produced almost simultaneously but 6,000 miles apart now make the lengthy task of tightening tank tracks a mere snap for tank crews.

The new method, perfected inde-

ARMOR COMMANDERS RETIRE



Lt. Gen. Willis D. Crittenger . . . USMA 1913 . . . career in the mobile arm . . . associated with early development of armor . . . consecutively commanded 2d Armored Brigade; 2d Armored Division; III Armored Corps . . . IV Corps in Italy in WWII . . . CG of First Army on retirement . . . President of U. S. Armor Association for last three years.



Maj. Gen. Orlando Ward . . . USMA 1914 . . . tank brigade CO in 1st Armored Division in 1941 . . . brief tour 8th Armored Division . . . CG 1st Armored Division March 1942 . . . commanded it in combat North Africa . . . CG Tank Destroyer Center 1943 . . . CG 20th Armored Division at Camp Polk 1944 and in combat overseas in the ETO 1944-1945.



Maj. Gen. Robert W. Grow . . . National Guard 1915 . . . RA 1916 . . . early career Cavalry . . . Mechanized Force, Ft. Eustis, 1931 . . . Knox in 1934 with 1st Cavalry Mechanized . . . G3 2d Armored Division 1940 . . . commanded 34th Armored Regiment, CCB 8th Armored Division, CCA 10th Armored . . . CG 6th Armored Division ETO.

All photos U.S. Army

pendently in Germany and at Fort Hood, reduces the job to three minutes. Previously it took five men and a tank retriever three hours.

First to come up with the time-saving idea was Master Sergeant Edward J. Mordush, a 6th Armored Cavalry soldier in Germany. Sgt. Mordush states that all there is to it is, "A sliding T-bar (fitted to a standard wrench) is put through the connector of the track, lifts the track idler adjustment nut; then simply backing up the tank causes the track to fall tightly in place."

Only days after Mordush's method was perfected, Major Eugene O. Allen, 1st Armored Division Maintenance Officer, completed plans for a similar device.

Both inventions take the sag out of tracks much the same way, the 1st Armored Officer's attachment being welded to the wrench.

Greatest advantage of the new method is the saving of manpower and time, especially in field operations, by letting the tank engine supply the leverage for tightening the track.

First Light Tanks to Troops

The initial shipment of T41E1 Walker Bulldog light tanks to go to Army troops left the Lima, Ohio, depot of the Army Ordnance Corps late in December, it was announced by the Department of the Army.

The light, 26-ton tanks, first of the new family of tanks developed by the Army since World War II, were produced at the Cadillac Tank Plant at Cleveland, Ohio, and have been accepted by the Army.

Destination of the first of the tanks to be issued to troops for field use will not be announced.

Several hundred of the Walker Bulldog tanks are awaiting needed modification of the gun sighting system and turret control mechanism. These improvements have been developed by Army Ordnance's Frankford Arsenal, at Philadelphia, and the Cadillac Division of General Motors.

The 26-ton Walker Bulldog is armed with a 76mm high velocity gun, a .30 caliber and a .50 caliber machine gun. Powered by a 500-horsepower air-cooled Ordnance-Continental engine, it has the Allison cross drive transmission, and a speed in excess of 40 miles per hour. Steering is accomplished by a T-bar with hand grips simulating an automobile steering wheel. Its four-man crew includes the commander, gunner, loader, and driver. Its unit cost is set at \$135,000.

Uses of the light tank are probing, reconnaissance, and patrol duty, and to knock out any intervening light enemy tank opposition. Its primary role is detection of points of enemy strength and weakness which are reported back to commanders. It has the ability to destroy small enemy units, and meets the modern demand for air transportability.

Tank Production

Many recent newspaper articles have pointed out the cutback and phasing down of tank production.

In the 8th Quarterly Report of the Office of Defense Mobilization to the President the reasons for slowing down are given and are quoted herein. The Department of the Army has released similar information to the press.

"Production of the medium tank, which in dollar terms is the most important combat vehicle in the Army procurement program, has reached a stage which is typical for a wide range of Army items. Designs have been perfected, production facilities are almost completely equipped, and a high rate of output of both the M47 and the newer T48 has been attained. Now, a basic question is presented as to how fast the remaining tanks in the program should be produced.

"To produce quickly the entire quantity of tanks planned in the current program would mean greater immediate strength, but it would raise sooner the problem of maintaining facilities in a stand-by state of readiness after current production goals have been met. A 'stretched-out' schedule, on the other hand, would delay the readiness of our forces but keep a greater number of production lines in operation over a longer period—which means in a greater state of readiness for rapid expansion to all-out production rates if that should become necessary. Continued operation of the production lines also would permit the introduction and testing of improvements in actual production models.

"The Army concluded that most of the medium tank production planned

"My congratulations to the Officers and men of Armor, our modern Cavalry, upon the occasion of the 176th birthday of their arm.

"Rich in its heritage, Armor combines the dash of Cavalry, the firepower of Artillery, and the tenacity of Infantry. Its power and mobility make it the perfect striking force.

"The performance of Armor in World War II was magnificent, and today in Korea, despite unfavorable terrain, it is adding to the fine reputation won in the campaigns of Europe and the Pacific.

"Today Seventh Army pauses to salute the 'troopers' who have won the admiration and respect of their comrades-in-arms everywhere."—LT. GEN. CHARLES L. BOLTE, Commanding, Seventh Army.

for 1953 should be continued on schedule but that thereafter the previously scheduled production should be stretched out. By mid-1954, the country's tank plants will be operating at only a small fraction of capacity, but the maintenance of going lines would permit rapid expansion if necessary.

"In the past 2½ years, large numbers of a modern light tank—the T41—have also come off the production lines. The development stage on a new heavy tank—the T43—is completed and deliveries of the production model will begin in the next few weeks."

EIGHTH ARMY COMMAND



U.S. Army



U.S. Army

On 31 March 1953, General James A. Van Fleet will retire from the Army after thirty-eight years of exceptionally distinguished commissioned service. He will relinquish his command of the Eighth Army in Korea to Lieutenant General Maxwell D. Taylor, presently serving as Deputy Chief of Staff of the Army. General Taylor will leave shortly for a briefing at General Clark's headquarters in Japan. He will proceed to Korea where he will have an opportunity to visit units at the front prior to General Van Fleet's departure.

HOW WOULD YOU DO IT?

AN ARMORED SCHOOL PRESENTATION

AUTHOR: CAPT E. L. GROSS

ARTIST: M SGT W. M. CONN



SITUATION 1. You are commander of a recently activated tank company. You know that you must carry a stock of vehicular spare parts for repairing and maintaining vehicles within the unit. Your motor sergeant wants to know the number and kind of spare parts he should stock. What would you do?



SERGEANT, PREPARE THE
PLATOON FOR MOVEMENT.

SIR, THE TRACKS ON SOME
OF OUR TANKS ARE FROZEN
TO THE GROUND.

SITUATION 2. You are a tank platoon leader operating in the field during freezing and thawing weather. Your tanks have been parked for a short period of time. In anticipation of movement, you inspect and prepare your vehicles. In doing so, you discover that the tracks of some vehicles are frozen to the ground. How would you relieve this condition, and what should be done to prevent the condition in future operation?

DEPARTMENT OF THE ARMY
SUPPLY CATALOG

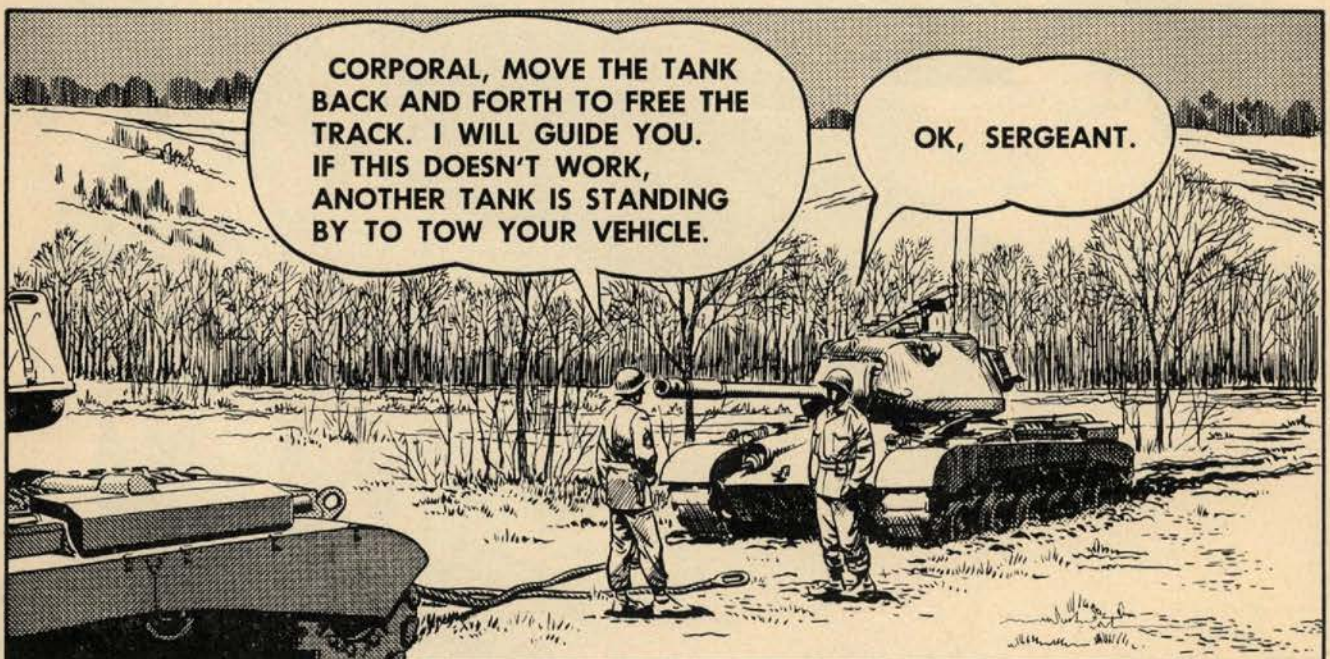
ORD 7 SNL G-740

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)					(9)
STOCK NO.	FEDERAL ITEM IDENTIFI- CATION NO.	MFR'S PART NO.	ORDNANCE PART NO.	DESCRIPTION	UNIT OF ISSUE	QUANTITY IN- CORP. POS- SIBLE IN UNIT	ORGANIZATIONAL ALLOWANCES					REFERENCE SYMBOLS
							No. ea, Qty, or 1/2, number of major items					
							1-15	16-35	36-55	56-100		
G740-7375016	-----	EAT-1E2183 WO-649760	7375016	CAP, filler, fuel tank, w/CHAIN, assy.....	ea	1	%	%	1	1	X	
G740-7375020	-----	WO-801263	7375020	GASKET, fuel tank cap (rubber).....	ea	1	%	%	1	1	X	
G740-7375038	-----	AHC-AF505 WO-800595	7375038	LINE, flex, fuel line to fuel pump.....	ea	1	%	%	%	%	X	
G740-7697471	-----	WG-AS3T90C WO-800079	7697471	TRANSMISSION, w/gearshift hand LEVER, assy.	ea	1			%	%	X	

% The percent symbol (%) indicates additional items not carried by this category of main-
tenance, but which may be requisitioned when needed for repair.
%% The double percent symbol (%%) indicates items which may be requisitioned and installed
by this category of maintenance, when approved by the supporting ordnance officer.

SOLUTION 1. An Ord 7 SNL Supply Catalog is published for each vehicle, listing organiza-
tional vehicular spare parts allowances. If this publication is not issued with the vehicle, it should
be requisitioned through normal supply channels.

DISCUSSION 1. Select the organizational allowance column corresponding to the number of
vehicles in the company. Opposite each item is the amount authorized for stock or a symbol
indicating whether or not the item is authorized for replacement by the unit possessing that
number of vehicles. Explanation of symbols is contained in the catalog. Other details pertaining
to vehicular spare parts supply are found in Ord 1, Introduction and Index.



SOLUTION 2. Rock the vehicles slowly back and forth under their own power. If this pro-
cedure does not free the tracks, slowly tow the vehicles to relieve the condition.

DISCUSSION 2. Freezing of vehicles to the ground is not an every day occurrence and usu-
ally catches us off guard. If intermittent freezing and thawing weather is anticipated, always
park your vehicles in a mat of brush, grass, small logs, gravel or other material to keep the track
from having complete or direct contact with the ground. After the track is free, you should
make sure that mud or ice adhering to the track does not travel over the top and damage fen-
ders and support rollers. It might be necessary to use an ax or sledge hammer to clear the
track.

A distinguished political scientist carries forward a series on history.

The Holy Roman Empire

by DR. ROGER SHAW

ON a bleak Christmas day in the year 800, mighty Charlemagne was worshipping in St. Peter's at Rome. "Unexpectedly," the Pope—Leo III—set a crown on the monarch's blond head as he knelt in prayer. The congregation acclaimed the deed and hailed this grandson of Charles Martel, victor over the Saracens at Tours, as Carolus Augustus, Emperor of the Romans.

Teutonic Charlemagne, King of the Franks, always asserted that this Roman coronation came as a complete surprise to him. The glamorous title added nothing to his power, it is true, but his prestige was vastly enhanced among his primitive French and German peoples, who entertained vague memories of the vanished grandeur of the Caesars and the glory that was Rome.

And yet this great German, first Emperor, had fought his bitterest conflicts against other Germans, the fiercely heathen Saxons. Charlemagne had inherited this war from his grandfather, Martel, and his father, Pepin the Short. The Saxons clung to their ancient Nordic gods and continued to live the life of Tacitus. Charlemagne destroyed their sacred phallic pillar, the Irminsul, near the river Weser, and pushed eastward to the Elbe. The tides of battle ebbed and flowed, and at one point Charlemagne slaughtered 4,500 Saxon prisoners in a single day. Finally, after victories and reverses, the Franks conquered. Widukind, pagan

Saxon leader, submitted to baptism, and the Saxon sachems became feudal vassals of the Frankish King.

The Pope evidently regarded this Christian conquest of the Saxon heathen as a sort of Crusade. In effect, his coronation of Charlemagne as Emperor was a papal benediction and reward. It resulted in the Holy Roman Empire of the German Nation. And it is typical of Germany's unhappy history that the Holy Roman Empire was based indirectly upon the "fratricidal" strife of Frank and Saxon. Afterward, in an Empire of Hitler's making, it was Widukind that was the German hero, and Charlemagne, the deep-dyed villain. And Nazi neo-pagans resurrected neo-Irminsuls, "to repair the damages of Christianity."

The Holy Roman Empire lasted for more than a thousand years—from 800 down to Bonaparte and 1806. As has been stated a hundred times, it was neither "Holy" nor "Roman," but was a loose sort of feudal League of Nations, mostly Germanic. Theoretically, it was a continuation of the Western Empire of ancient Rome, which had been so effectively overrun by the barbarians in the fifth century. Charlemagne actually considered himself the successor of Augustus and Marcus Aurelius—and, strangely enough, a thousand years later Napoleon Bonaparte considered himself a Charlemagne.

After 962, the Empire was reorganized by Otto the Great, for Charlemagne's death had resulted in chaos. King of Germany and Holy Roman Emperor became titles held

in common, as a rule. Not only Germany, but much of Italy, was included, and in theory the Emperor ruled over all the Christians of western Europe. Some of the Emperors dreamed even of world-wide dominion, and at various periods such lands as Hungary, Poland, Denmark, Jerusalem, and Cyprus were affiliated as imperial vassals.

But the purely Germanic nature of the Empire slowly became clearer with the passage of time. By the close of the thirteenth century, there was little of the imperial authority left in Italy. Strong or pestiferous Italian city-states and the rivalries between Pope and Emperor accounted for this tendency, as the pro-imperial Ghibelines and anti-imperial Guelphs pursued their partisan vendettas up and down the peninsula. Here, gangster warfare was carried out in a really thorough manner, while racketeering became a fine art as the Renaissance dawned paganly.

By the close of the fifteenth century, the Empire lost, too, a Germanic fragment, the Swiss. These doughty mountain men, with their long pikes, had beaten the imperial chivalry at Morgarten in 1315, advancing behind a veritable barrage of hillside boulders which pushed the Emperor's knights into a lake—horses, armor, and all. Thereafter, the Swiss, enthused by their success over outdated feudal cavalry, sold themselves as mercenaries to all comers, and did a nice business at it. Their last stand of note (1792) was to be in defense of Louis XVI, where the heroic Swiss Guardsmen were slaughtered in the bloody tide of the French Revolution.

DR. ROGER SHAW, Professor of International Relations at Trinity College in Hartford, Connecticut, is a regular contributor to ARMOR.

ARMOR—January-February, 1953

The Dutch provinces were republican, capitalistic, and seafaring in their way of life, and they, too, drifted away from the Empire in politics and economics long before their independence was recognized formally in 1648, after the Thirty Years War. Increasingly they looked toward England, sometimes as friend and sometimes as foe.

The Holy Roman Emperors were elected, as were the Popes for that matter. The primitive German kings had been so chosen by the chief men of the tribes, other freemen concurring, and it had become a fixed habit. Under the Empire the most powerful nobles had secured control of imperial elections, and by the thirteenth century the number of electors was fixed at seven. The famous "Golden Bull" of 1356—an Imperial Constitution—gave the vote to the Archbishops of Mainz, Treves, and Cologne along the very Catholic Rhine; to the King of half-German, half-Slavic Bohemia far away to the east; to the Duke of Saxony; to the Count of the Rhenish Palatinate; and to the Margrave of tiny Brandenburg, with its Berlin, up north. We shall hear more of Brandenburg. It was not until 1417 that the Hohenzollern dynasty "arrived" there, to remain till 1918.

The Golden Bull declared that electoral votes were attached to the above seven offices, and *not* to persons, and that lay offices were to descend by right of primogeniture from father to son, or next of kin. The three archbishoprics, of course, were not hereditary. Three centuries later, the Palatinate vote was transferred to Bavaria by an arbitrary action of the Emperor. But the Palatinate was reinstated shortly after as an eighth electorate, and at the close of the seventeenth century, Hanover became the ninth. Since the electors of Hanover were Kings of England after 1714, London, too, helped indirectly to choose the later Emperors!

Bribery and horse-trading were rife in the imperial elections, which were held at Frankfort on the Main. The coronation city was Charlemagne's favorite haven of Aix-la-Chapelle, or Aachen. Some time during his reign, the Emperor was supposed to travel to Rome for an additional papal coronation, but the last time this took place was in 1530 when the famous Charles V—contemporary of Henry

VIII of England and Francis I of France—was crowned by Pope Clement VII. The successor-elect of the Holy Roman Emperor received the phoney lesser title of "King of the Romans."

Just as the Empire was a loosely organized League of Nations, largely Germanic, so it was generally held that the Emperor need *not* necessarily be a German prince. The most astounding case of this came in 1257. A drawn election took place, by a divided vote of 4 to 3. Two Emperors were chosen, or claimed they were, and one of these was English (Richard of Cornwall) while the other was a Spaniard (Alfonso of Castile). Needless to say, neither obtained ac-

"In ground warfare, Armor has grown to a position of importance in the great team of those combat arms which meet the enemy face to face.

"It would be unrealistic to believe that Armor, or any arm or weapon, for that matter, is self-sufficient.

"However, the mobile, armor-protected fire power of tanks, which provides the commander with a means of making a fast-moving decisive blow, with a minimum cost in casualties, dictates that Armor must presently continue to maintain its position of importance on the battlefield."

—LT. GEN. W. D. CRITTENBERGER.

tual power in the Holy Roman dominions.

As a matter of fact, although this imperial office remained elective in theory and practice, in effect it became hereditary after the middle of the fifteenth century. For between 1438 and 1806, every Emperor except two belonged to the Austrian house of Hapsburg, which controlled the Bohemian electorate and managed to cajole, buy, or marry itself into the imperial office term after term. The Hapsburgs were indeed vote-getters extraordinary, losing only a couple of elections in nearly four centuries, and these under duress.

The ancient Germans had been democratically inclined, and Charlemagne continued the habit by calling in nobles and freemen for fairly fre-

quent consultation. But the Empire dispensed with these assemblies, and the Emperors generally called on the favored few as they pleased. These feudalists formed the Imperial Diets. Burghers from the cities were added to the electors and great nobles as the German medieval towns grew powerful and rich—towns like Augsburg, Nuremberg, or the Rhenish settlements. By the fourteenth century, the Diet functions were judicial as well as administrative, although the lesser nobility and commons had *no* voice in Diet deliberations. In reality, however, the Imperial Diet was as helpless and ineffective as the League of Nations or U.N. Assembly later on, and equally pretentious.

At the close of the fifteenth century the French invaded Italy, and Emperor Maximilian I attempted to unite the Empire to resist them. His Diet, as usual, proved useless, but it created an Imperial Chamber, a high tribunal to attempt to keep peace within the Empire. It consisted of a president appointed by the Emperor, two vice-presidents, and anywhere from sixteen to fifty associate judges, lawyers and nobles. The members could not be removed from office. It sat as a court of appeal, arbitrated disputes between princes of the Empire, and redressed miscarriages of justice, both high and low. It was due to the work of the Imperial Chamber that Roman law became the uniform code of Germany, and the Chamber continued its sessions at Frankfort, Speyer, and Wetzlar, down to 1806.

Since the Viennese Emperors had little or no authority over the Imperial Chamber, they became jealous of it and attempted to transfer some of its authority to the "Aulic Council," a similar body but confined to Austria. This became a rival to the Chamber, and its twenty-one members were chosen and paid by the Emperors, ensuring their direct control. The Aulic Council sat at Hapsburg Vienna, and at an Emperor's death a new membership was appointed by his successor. Specifically, the Aulic Council guarded zealously the reserved rights of the Emperor; arbitrated between the Emperor and the Germanic princes; and interfered too actively in Italian and Belgian affairs. Six of its members were generally Protestants, and so the spokesmen for religious minorities within

the Empire. Like its rival, the Imperial Chamber, the Aulic Council continued on down to 1806, mismanaging all the campaigns against Bonaparte and courting favor with the Emperor till the last. It was always narrowly "Austrian" in outlook.

In 1805, the Sun of Austerlitz shone brilliantly on Bonaparte in his most famous victory. The battle was fought on December 2, first anniversary of his own imperial coronation. He had captured Vienna, put the Hapsburgs to flight, and overwhelmed the Austrians and Russians with inferior numbers. It gave the Little Corporal "inexpressible delight," as he put it. Also, it meant the end of the Holy Roman Empire. By the onerous terms of the Treaty of Pressburg (now Bratislava in Soviet Czechoslovakia), Franz II was forced to renounce the imperial crown. He ceased to be Holy Emperor, although he continued on as Emperor of his hereditary Austrian possessions which held together until the close of the First World War.

So perished the Holy Roman Empire of a thousand years. With the end of its Hohenstaufen rulers in the middle of the thirteenth century, its collective strength had waned to such an extent that, by 1648, the individual princes were formally permitted to contract alliances with foreign, and oftentimes *anti-imperial*, powers! Thus, Saxony helped the Swedes against one Emperor in the Thirty Years War, Bavaria aided Louis XIV against another Emperor, while Frederick the Great of Prussia fought long years against an Empress, with whatever allies he could gather together, French at one stage, British at another.

The first Hohenzollern to wax important in this strange Holy Roman Empire was a Burgrave of once beautiful Nuremberg named Frederick. The Emperor Sigismund Luxemburg (who burned John Huss, the reformer) elevated the little Burgrave to the electorship of Brandenburg in 1417. Brandenburg was a sandy wasteland with a tiny capital called "Berlin," full of bears, Slavs, and rebellious feudal nobles to be put down. It was nicknamed the "pounce-box of the Holy Roman Empire." But Frederick had loaned Sigismund money,

and this was his reward. He became Frederick I of Brandenburg; and Brandenburg expanded eventually into Prussia, and later (1871) into Prussian Germany.

Frederick did not love his new possession, but with it went an imperial electoral vote and a marked sense of importance. He preferred his native South Germany, although his noble family had had a great deal of friction with the thrifty and independent burghers of Nuremberg at one time or another. Frederick the Great long afterwards judged from his picture that he looked like an "elk-head." He was short, with a round face, and darkly flowing locks, and diplomatic ways.

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He was a great help to his grateful Emperor, but the Brandenburg Junkers—stiff-necked—did not want him. They preferred the feudal anarchy to which they were accustomed. These rough lordlings called their new elector the "Nuremberg toy," and added that "If it rains Nurembergers for a year, we will still keep our castles!" The Quitzow clan were especially hostile to authority, but strangely enough the then feudal Bismarcks welcomed the new elector and were called by him his "beloved B's." History was to repeat, for though the Quitzows died out, the Bismarcks went on "forever."

There ensued for Frederick years of fighting against the entrenched greed of the Junkers. He knocked down their castles with primitive artillery, which they considered un-

sportsmanlike, and he lynched them when he got the chance. He had one piece of ordnance called "Lazy Greta" which was especially big. It was so called because it was difficult to move it, and "Lazy Greta" was the "Big Bertha" of the feudal wars of Brandenburg. The Junkers trembled at "her" bellow. Also, they trembled at being broken on the wheel. Nuremberg at that period specialized in tortures, as well as in Albrecht Durers.

Frederick called himself "God's steward." Having quieted Brandenburg as best he could with his Nuremberg mercenaries and free-companions, guns and gunpowder, he returned to the diplomatic service of Emperor Sigismund where he made himself useful in a variety of ways, financial, military, and advisory. Gradually the Junkers began to come over to Frederick, who used his diplomatic talents by intriguing with the Poles against his imperial benefactor, H.M. Sigismund. The latter, however, raised the Wettin family to electors of neighboring Saxony. This resulted in a feud, for centuries to come, between Wettins and Hohenzollerns, the Wettins holding on in Saxony until 1918.

Frederick was appointed commander-in-chief of the Imperial Army by the Diet, much to Sigismund's disgust, and led the united Germanic forces against the Hussites and Czechs in the long religious wars of this pre-Reformation. The new Brandenburg elector did none too well against the Hussite generals, Ziska and Prokop.

The blind Ziska led fleets of field-guns mounted on swift-moving wagons, which were taught to maneuver in exact formation and constituted primitive tanks in a sort of early mechanized warfare. These frustrated the feudal chivalry sent against them, and defeated the Brandenburgers on more than one occasion. But religious schism weakened the Hussites, and the innate diplomacy of Frederick counseled peace negotiations in which he showed himself more adept than in matters of generalship and tactics. It was only when the imperial forces turned themselves into lumbering, armored field-artillery—Knights as Powder-Monkeys—that the Hussite "tank" teams met with reverses.

Pomeranians and Mecklenburgers

later swarmed into Brandenburg, captured Frederick's cherished artillery, and forced him to retire into South Germany. He made his eldest son, John, his regent. Then he begged Emperor Sigismund for help—electoral Berlin seeking aid of imperial Vienna. The Emperor mediated with the invaders of Brandenburg and saved something for the regent from the debacle, but Frederick remained in the south. On Sigismund's death, he had aspirations for the imperial crown, but these failed to materialize. A Hapsburg was elected instead—Sigismund's son-in-law, Albert—and the long rivalry between Hohenzollerns and Hapsburgs for control of the Empire, and of one another, had an incipient beginning.

Frederick, first Hohenzollern elector of Brandenburg within the Holy Roman Empire, died in 1440 as an ardent Catholic and heretic-hunter. Had he known that his house was to turn ultra-Protestant, it would have surprised him. Nor did he realize what his family was to accomplish in hopeless little Brandenburg, home of bears and Slavs and Junkers with mailed fists.

His dying words were said to be: "You come from Brandenburg, and you do well to leave it and fly away. Who would care to stay in such a land, above all in winter." He was addressing a flight of storks.

The Hohenzollerns came up from Nuremberg. But Nuremberg later was to be reinstated, as Nazi Party political center. Hitlerites, too, were inclined to shun Brandenburg and Brandenburg's drear Berlin (whose very name, of Slavic origin, means "ursine").

Although the first Hohenzollern elector of Brandenburg did not care for his new domain, his House carried on there after him. Its method of subjugation may best be described by the nickname of the second elector, Frederick's son, which was "iron-tooth." The early Hohenzollern bite drew blood, and plenty of it, in the trackless wastes of the north.

Meanwhile, the Hapsburg family, foes of the Hohenzollerns in days to come, had originated in the Swiss canton of Aargau. There stood the old family homestead, the castle of Habichtsburg from which the dynasty derived its noble name. "Habicht"

means "hawk."

The year 1273 was a leading date in Hapsburg annals, for in that year Rudolph Hapsburg was elected Holy Roman Emperor. Five years later, Rudolph defeated the Czech Bohemians and forced them to give up Austria. Thenceforth, Austria became the special preserve of the Hapsburgs, and their hereditary possession. Thus we see the Hohenzollerns established in Brandenburg (Prussia-to-be) in 1417, and the Hapsburgs as lords of Austria in 1278.

Rudolph, through an acquisitive marriage and successful baronial wars, had become the most powerful prince in the southwest of Germany. He was considered "brave, wise, and fair-dealing." His election as Emperor was engineered by Pope Gregory X and by the electors of the Rhenish archbishoprics, who respected his integrity and localized fame, but did not consider him powerful enough to restrict their states-rights privileges.

One elector, Ottokar of Bohemia, refused to acknowledge his allegiance to the new Emperor. But the battle of the Marchfeld decided the issue and Ottokar was killed, firmly establishing a Hapsburg in imperial power and in Austria at the same time. Nor was Rudolph the weak and easy-going southlander that the Rhenish archbishops expected. He suppressed robber barons, hanged rebellious nobles, and destroyed three-score castles—"hornets' nests"—in his determination to bring order out of feudal anarchy. The townsmen and lesser nobility appreciated these centralizing efforts, although they resisted the New-dealing imperial taxation with a vim.

Where Rudolph I pointed the way, the Hapsburgs followed. Between 1438 and 1806 they virtually monopolized the Imperatorship, and it was in the last quarter of the fifteenth century that they earned the happy reputation of "marrying instead of fighting." Thus, one wedding acquired the rich Netherlands for a Hapsburg, while another won Spain, with its vast colonial empire and spots of Italy. In 1526, a Hapsburg was elected to the throne of Bohemia and to the throne of Hungary. This laid the foundations for the later Dual Monarchy of Austria-Hungary.

With Hapsburgs ruling from Holland and Peru to Madrid and Vienna,

the world's balance of power ceased to exist. The Holy Roman Empire and its widespread affiliates exceeded Ancient Rome in power and prestige. The trifling brood of lofty Habichtsburg had become mightier than the Caesars. France took alarm. On her side was Unity, on that of the Hapsburgs was mere Extent. All through the sixteenth and seventeenth centuries, and into the eighteenth and nineteenth, the Franco-Hapsburg struggle continued with shifting fortunes. Louis XIV of France was a signal storm-center during his long reign of seventy-two years. Bonaparte, who married a Hapsburg, was in a sense their family executioner. Or were they *his*?

The Holy Roman Empire of the German Nation needed a Richelieu, a ruthless centralizer, to curb the feudal vassals and turn them into harmless courtiers. It never found one. Instead of a single "benevolent" despot, as in France, or an aristocratic oligarchy working through a "kept" Parliament, as in England, the Empire became a strange congeries of greater and lesser notables, with the Emperor a figurehead except in his own hereditary Austrian dominions. Feudalism was ended in France really by the seventeenth century. It lingered on in the countless fiefs and courts of the Germanies until after 1870. England had its Scotland, and France its Burgundy. These rebellious particularisms were overcome and amalgamated. But the Holy Roman Empire *never* could digest its vassal yeast-in-ferment, Brandenburg-Prussia.

The official title of the Holy Roman Empire was *Reich*, and that of the Holy Roman Emperor was *Kaiser*. The latter was a derivation of Caesar, the family name of the bald-headed, profligate politician, "Jack" Caesar, who conquered Gaul. So popular did the Caesarian name become that in the first World War there were no less than six of them: the Austrian and German Kaisers, the Turkish Kaiser of Constantinople, the British Kaiser of Hindustan, and the Czars of Russia and Bulgaria; not to mention the *Mpret*, or Imperator, of small Albania and the *Shah* (Caesar) of Iran. The Hindu and Bulgar Caesars survived 1914's Armageddon, but not that of 1945.

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THREE BATTLES: ARNAVILLE, ALTUZZO AND SCHMIDT. By Charles B. MacDonald and Sidney T. Mathews. From the series *United States Army in World War II*. 443 pp. Washington, D. C., Government Printing Office. \$4.00.

Reviewed by
NED CALMER

The plodding foot soldier of World War Two in Europe has now received his due. *Three Battles*, produced by the Department of the Army in Washington, pictures the difficulties of

small unit leaders and GI's in executing missions set for them by higher headquarters. This is the first small-unit action story in the Army's projected monumental series of 91 volumes. It tells of a river crossing at Arnaville in France, a breakthrough at Monte Altuzzo in Italy, and the battle for Schmidt in Germany. As a war correspondent who saw action in all three of those areas, I found it more fascinating and more exciting than any of the fiction written about the attack on Fortress Europe. Fascinating because it is true; exciting because it uplifts the heart in tribute to the men who fought.

As the Army's chief of Military

History points out in his foreword, we deal here with the eternal and terrible problems of warfare—"What do I do next? Where shall I fire? Who is now in charge? Shall I fire? Shall firing expose my position? Shall I wait for orders?" There is no time out in battle, says General Ward. The team must function despite shortages in personnel and equipment. "Above all the human mind must comprehend which unit, for the instant, has the leading role." The men must be trained in achieving the order necessary to overcome the omnipresent confusion on the battlefield.

To illustrate this lesson, Charles B. MacDonald and Sidney T. Mathews

The Authors



Charles B. MacDonald, author of the Arnaville and Schmidt portions of *Three Battles*, served as a rifle company commander in the ETO in World War II—combat experience which led to his book *Company Commander*, published in 1947. He is now engaged in the research and writing of the book *The Siegfried Line* for the Office of the Chief of Military History, Department of the Army.



Dr. Sidney T. Mathews, author of the Monte Altuzzo portion of *Three Battles*, was a combat historian during World War II, serving with the Fifth Army in the Mediterranean area. Author of the study *Sante Maria Infante* published in 1947, he is now engaged in the research and writing of *The Drive on Rome*, one of the Mediterranean sub-series, for the Office of the Chief of Military History.

The Reviewer



Ned Calmer is an experienced newsman whose newscasts have been heard over the Columbia Broadcasting System for the last decade. During the late world war he covered the European Theater for that network, a firsthand observation which inspired his best-seller war novel, *The Strange Land*, published in 1950. He is now a CBS radio correspondent, with headquarters in Rome, Italy.



ARNAVILLE. Infantrymen approach the Moselle for the crossing near Dornot.

have based their accounts on the combat historians who followed the troops to interview the participants in each day's fighting. Material of this sort from the Pacific theaters existed in abundance, but until now we have not had any such rich sources on the action in Western Europe. You may remember the "American Forces in Action" series, mostly devoted to infantry combat. In the present work the additional purpose is to show the roles of other arms and services so as to clarify the interrelation of small units in the field in a wide variety of tactical situations. As Mr. MacDonald remarks, out of a combination of actions like those chosen for this book—failures as well as successes—the large-scale victories or defeats are compounded. We see now how it all actually happened, except, of course, for the elements of mystery unrecognized even by the men taking part in the battle and perhaps forever closed to our eyes.

The authors have employed a second basic source of material—the official reports and other papers used by the German units opposing the American troops in these actions. They provide an invaluable cross-check on our own accounts and an illuminating analysis of enemy methods and reactions in various situations. But what I found most gripping in all these interviews and documents, American or German, was the human element they betray and the ever-capricious play of fate and chance.

Another outstanding feature of

Three Battles is the recounting of errors and misunderstandings, always so important in the development of combat situations. The authors don't stop to editorialize on the misakes of commanders, the folly or fear of the men they lead, but they make them glaringly clear. One can imagine how far the Soviet Army would go along these lines in a historical account intended for general reading!

The first of the *Three Battles* takes us back to those fast-moving days when Patton's army was racing across France and the German armies in the West were in full retreat. But by the end of August, Patton had run out of gasoline. His XX Corps bogged down at Verdun. Reconnaissance units reported that the enemy was "panic-stricken," and as soon as enough fuel was on hand the advance resumed. XX Corps staff thought the

Germans would keep on falling back until they were behind the Siegfried Line. Consequently virtually no information about the fortifications in the Metz area was given to the fighting units, even as near to Corps as Regiment. But we know now, and this bitter story tells us, that Hitler had no intention of abandoning his Metz-Thionville salient. From here on the history of this battle is one of slogging, despairing struggles, of confusion in communications, lack of coordination among units, failures and tragi-comedies, revolving about the 10th and 11th Infantry Regiments of the 5th Infantry Division and Combat Command B of the 7th Armored Division. Highlighting the somber picture is the heroism of such men as Pfc's Dickey and Lalopa, who killed 22 of the enemy before their isolated position was overwhelmed. The nearest German body was only three yards away. Again and again we hear the calls for air support that were unanswered as the Americans who had crossed the Moselle at Dornot held their bridgehead across the river. Finally came the order to withdraw, after one of the heroic episodes of the campaign in France, but the Dornot bridgehead had probably made possible the later successful crossing at Arnaville, marking the real opening of the battle for Metz, which did not fall, however, until more than two months later.

The second of the *Three Battles* is a chapter in the drive toward the Gothic Line which Marshal Kesselring so skilfully defended in his masterly retreat northward through Italy.



SCHMIDT. A 155mm SP gun supports the troops attempting to take the town.



ALTUZZO. A sample of terrain and fighting that characterized the bitter Italian campaign and is so like war in Korea.

"I'm going to throw you a long forward pass into the Po Valley," General Mark Clark told his infantry commanders, "and I want you to go get it." The blow was launched through rugged Giogo Pass in the Apennines. Though more than a quarter of a million men were involved in this drive, the assault force that actually met the enemy was never larger than two rifle companies at a time, and sometimes only a platoon. This was warfare on the smallest scale. There were moments when an American soldier could reach out and touch the shoulder of an unsuspecting German. It was a maze of mountain trails, thick underbrush, precipitous ascents, treacherous terrain. Peabody Peak—as one pinnacle was nicknamed by survivors of the action there—was one of the bloodiest battlegrounds of the Italian campaign. It was the efforts and the sacrifices of men such as those of the 338th Infantry Regiment of the 8th

Infantry Division who fought here that brought about the final triumph of the attack and the cracking of the Gothic Line. But the Italian campaign was far from ended. Months later, in the midst of the cruel winter characteristic of these mountains, American troops were still standing stalled in the Apennines. It would be spring before they crossed the Po.

"Objective: Schmidt" is the third of the *Three Battles* and takes us through the slow-going fighting toward the Roer River after the breaching of the Siegfried Line. Schmidt was an important town, lying as it did on a ridge overlooking the Roer dam system with which the Germans could at any time flood the terrain over which the Americans—in this case the 112th Infantry Regiment of the 28th Infantry Division—would have to advance. This was also the area of the Huertgen Forest, a dreaded name to men who fought there and the scene of some of mod-

ern history's most gruelling fighting. It was a Walt Disney wilderness, its picturesque growth providing a field day every day for German artillery, and hundreds of casualties among the American troops in its depths. "Objective: Schmidt" is the longest and most detailed of the stories in the book, and in some ways the least dramatic in nature. But Mr. MacDonald, who is the author of a notable war narrative entitled *Company Commander*, published in 1947, brings the whole wretched episode alive for us—a gamble that failed. Schmidt, in fact, was recaptured by the Germans and remained in their hands until February, 1945. But its story has become a classic in our small-unit military annals. Like the other two battles in this book, it stands as a permanent record for all the men who took part and their comrades of the American Army, and as a permanent memorial to those who did not survive.

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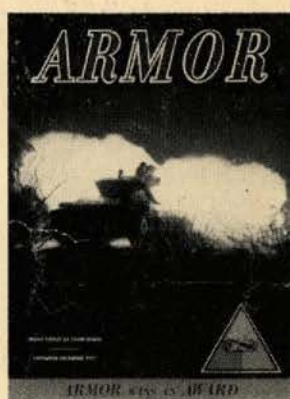
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LETTERS to the EDITOR

STONEWALL JACKSON

and the American Civil War

by

Col. G. F. R. Henderson

This book, used by the British War College and West Point, after fourteen printings necessitated a recasting. In analyzing all of Jackson's campaigns and engagements Colonel Henderson was able to keep the dispassionate attitude of the highly trained tactician, with the result of bringing Stonewall Jackson vividly alive as a man and military genius, re-creating his important part in the war between the North and the South. One of the few classic biographies of the modern world.

First Published in 1898

Price

\$6.00

Direct vs. Indirect

Dear Sir:

I have just read with much interest your issue for Jan-Feb '53. From many fine articles, the one entitled "For the Potential Corps Armored Officer" has especial interest for me.

Although the author of this article has remained anonymous, no one who was with IX Corps Headquarters in 1950-51 could doubt his identity.

In particular, I noted LtCol Pic—excuse me, the author's paragraph under "Operational Control" regarding the use of tanks in "indirect fire."

Let us consider his objections in the order given:

1. The "wearing out of gun tubes."

Of course, any tubes—tank, FA, or AAA, will wear out quickly if subjected to sustained rates of fire in excess of the rates set forth in the various TM's. Rate of fire is a command matter, influenced largely by the existing situation.

The 90mm guns of the Antiaircraft Artillery have as their primary target hostile aircraft. However, the secondary role of reinforcing Field Artillery fires is an important and specific part of AAA doctrine. Apparently, this secondary role has not imposed an impossible burden of tube wear on the AAA.

Further, normal tube life of the 90mm guns (AAA or tank) is not significantly shorter than that of the 155mm gun of the Field Artillery. The job of replacing a 90mm tube weighing about 2300 pounds is scarcely more difficult than that of replacing a 155mm gun tube weighing about 9600 pounds.

2. The "relative inaccuracy of the fire."

No one that I know or ever heard of wants to use tank fire for FA type, indirect precision (destruction) missions. I contend that tank fire based on corrections from observed registration is sufficiently accurate for adjusted fires or harassing fires on area targets.

3. The "difficulty in observing & controlling" tank fire.

Granted that the burst of a 90mm HE round is harder to pick up than a 105mm Howitzer, it's not *that* much harder—and can be done. Observed adjustments should be made by an Artillery Air OP, with guns using WP for initial rounds. As for Service of the Piece, that is a matter of fairly simple training for tank platoon leaders and crews. Fire direction may be handled by an adjacent Artillery battalion.

4. The "effect of reducing the tank's desire to overrun his enemy."

Gunnery—whether they be tank or Artillery gunners—habitually like to fire. When performance of the tankers' primary mission is not imminent but the enemy is still within range of his guns, one would imagine that the tanker would be glad to get in a few extra licks.

This was, in fact, the case upon the occasion when the tank company described by the author engaged in indirect fire. The tankers were enjoying the project and were glad to learn another means of using their weapons. We were just getting the thing well set up when the author, in great anguish, caused us to desist. The indirect firing done by these tankers may have had a vitiating effect upon their fierce desire to crush the enemy by mobility and shock action. However, I doubt it.

5. The "increase in the idea of using only the gun power of the tanks."

In view of the manpower advantages of our enemies, present and potential, the need for overwhelming superiority in fire power has greater meaning than ever before. Cannons are fire power, and 90mm guns are cannons—no matter how you mount them.

Tanks certainly must not be diverted from their principal role to act as reinforcing artillery. In a favorable situation for tank employment or in face of an enemy armored attack, it is very

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Rates: See bottom of contents page.

difficult to imagine a commander who would say, "Well, my tanks must be used as reinforcing artillery. I cannot spare them for their primary mission." But, when tank fire power can be properly and advantageously used in the Artillery role, it ought to be so used.

What should be the policies for use of tanks as Artillery? I suggest:

1. Execution of the basic tank mission must not be an immediate probability.

2. Tank units used as Artillery must be able to resume their normal role quickly and efficiently.

a. Firing positions must not be prohibitively distant from the regular blocking or reserve positions of the tank units.

b. Fires should be reinforcing. That is, observation, survey, and fire direction must be provided by the reinforced field artillery battalion. The tank unit should need only to accept and fire the missions.

c. The reinforcing role should be specifically initiated and terminated by the corps, division, or regimental commander as appropriate.

3. Rate of fire should be from 5 to 10 rounds per tube per day for short periods of 4 or 5 days at a time. A tank company thus could handle 6 or 7 missions per day during the period.

4. Training of tank units should include service of the piece in indirect fire; with, for officers and key NCO's, basic instruction in use of the aiming circle.

The author of cited article and I have had many arguments on this subject. He may still be unconvinced; but we will, I trust, remain friends!

WILLIAM W. COVER
Major Artillery

Ames, Iowa

A Spade a Spade

Dear Sir:

The cover of the latest issue of ARMOR Magazine bearing the insignia of five Allied Armored Divisions is beautifully done, albeit incomplete. Why did you not include the Belgian

16th Armored Division which is located in the British Zone? Thus there are six instead of five Armored Divisions on the European Continent. I'm sure Major General Gysels would be deeply hurt if he felt his division, although incomplete, was not considered a part of our mobile forces in Europe.

CAPT. LLOYD E. LORENTZEN
Co C, 29th Tank Bn (Hvy)

APO 42

● ARMOR's cover and tie-in editorial were aimed at illustrating how few as well as how many armored divisions are available to the North Atlantic Community for mobile defense of Western Europe. Omission of the Belgian 16th Armored Division was based on an understanding that it was still in organizational stages. ARMOR has expressed on many occasions its concern over such dangerous habits as that of calling the three U.S. light armored regiments in Europe "roughly equivalent to an armored division." No disparagement to the unit is intended; the reason is nothing more than a desire for a careful weighing of substance in keeping with the meaning of a military designation. ARMOR salutes the 16th Belgian Armored Division in the full realization of its contribution to the mobility of Western Defense, along with the five other Allied armored divisions and many armored groups, brigades, battalions and companies. (See page 30.)—ED.

Armor's Future

Dear Sir:

I am very interested in Armor and would like to subscribe to your magazine and have a list of any other publications or magazines on the subject. When I leave college I plan to go into the 49th Armored Division. Many of my friends are thinking along these lines. The big trouble is that the Army doesn't let us study Armor, or a branch in High School ROTC and we don't see much material on Armor, and we lose interest.

CADET PFC JIMMY HAYS
North Dallas High School
Dallas, Tex.

Edited by
Beatrice Ayer Patton

WAR AS I KNEW IT

by

Gen. George S. Patton, Jr.

From his childhood, George Patton had one absorbing interest—the military art. His life culminated in history's greatest opportunity for the practice of this art. Outstanding exponent of mobile warfare, his memoirs have the interest which always is found when an intensely human expert writes of the field to which he has given the unswerving devotion of his life.

First Published in 1947

Price \$4.50



THE COVER

A careful look at ARMOR's cover will turn up no less than thirteen M47 tanks engaged in a battalion exercise at the Armor Combat Training Area at Camp Irwin, California. That's about a half-dozen more than may be found in any photo from the Korean front, a special war where mobility and mass are forgotten. The status of our ground force mobility is a matter of great concern to the members of the Armor Association.

The sun is warm for the ides of March; warm as it angles through the 180 degree window bay fronting K Street; warm as it bathes the editor's chair positioned in the bright alcove.

An interesting chair, that! It's the chair that, figuratively speaking, has seen a quarter-hundred previous editors in a full sixty-five years since its establishment. It's the chair that's about to relinquish Editor Number 26; the chair about to receive Editor Number 27.

The occupant of this editorial chair will not escape a sense of history. At elbow stands a master file of bound volumes embracing three score and five years of publication. Around the walls are representative covers depicting changes in format through the years. A 1920 recruiting poster lists the mobile soldier's mount as "a courageous friend" and "man's noblest companion." Each World War II armored division is represented in a carefully selected and framed photo enlargement series. Portraits of fourteen Association presidents flank one wall of the library. The two Georges, Custer and Patton, are spotted in prominent position, and much in evidence are top figures in mounted, mobile, armored warfare, ranging from Murat to Jeb Stuart to Heinz Guderian.

Thus the headquarters of the Magazine of Mobile Warfare.

That master file! The careful researcher has here a wealth of historical background. For example, a look back over our editorial predecessors brings to light a list of some seven who went on to become general officers. One of these, Captain (later Major General) William H. Carter, was the only editor who later became president of the Association.

The name of another editor, who held the chair a half-century ago, will be familiar to many military personnel today who have had occasion to read his classic book, *American Campaigns*: Matthew Forney Steele retired as a lieutenant colonel, now lives in North Dakota.

Research reveals that periods of editorial incumbency have varied from two months up to eleven years, the latter record being held by Lieutenant Colonel Ezra B. Fuller, who filled the post

initially on an active duty part-time basis, and later carried along under retired status. In the earlier years of publication of the magazine of the mounted arm, the editorial stint was an extra duty detail. The material published in those years was substantially that presented in paper and discussion form before Association meetings. Layout was simple, illustration practically nil, and the entire operation might be said to have been more secretarial than editorial.

As time moved along and Branch Chiefs were instituted for the ground arms, and the editorial task took on proportion, the editorial assignment was moved into the Chief's office with an expanding attention which resulted finally in full-time assignment, the Army recognizing the appreciable contribution to the profession of arms resulting from assignment of qualified active professionals at this key source. Today the job has taken on the proportions of a staff operation, although it has been handled by a single editor for the past three years. The qualifications are not unlike those required in a similar capacity in the commercial magazine field.

Assignmentwise, five years may seem like a lengthy tour of duty, but editorialwise you may be sure it is not.

Although it is assumed that an army officer can do anything and everything merely by virtue of assignment, here is a type of work that is apart from the straight military qualification that is the foundation and framework for most duty.

It takes a good period of time to get properly wound up on the job. Just about the time an editor becomes familiar with the beat, has carefully developed his contacts, and has the ulcers well modulated—whoosh, the axe falls! He moves on, and his successor moves in to start the process once again. Herein lies a certain disadvantage in the active duty staff pattern. It is more than offset, however, by the professional qualification in branch specialty and validated technical knowledge which rotating editors are able to bring to the chair; this tends to keep the circuit open to the field and the working level, obviating an otherwise inevitable tendency toward preoccupation with high level strategy that is the result of being

walled off in an editorial office in the planning atmosphere of the Nation's capital for too long a spell.

The Army's farsighted action in recognizing, lo these many years, the value of the active staff, particularly with respect to the combat arms, has been in some degree sabotaged by the creeping effects of commercialism—so much so, in fact, that by the time this is read, it may well be that this magazine alone among the combat arms periodicals will be operating with an active staff on a wholly professional and non-commercial basis, in that critical area between the strictly official and wholly commercial fields. This is most unfortunate, especially for the junior officer and noncommissioned officer, whose outlets for expression, discussion, thought and learning, already limited, are being trimmed even further, rather than expanded. Thus commercialism and a seeming anti-intellectualism, under the guise of economy and unification, gnaw away at our professional media. Thus several of our individual arms, earnestly in need of attention, have lost a voice and championship.

A review of the history of the magazine of mobility is at the same time a review of the evolution of mobile warfare over a matching period of years. More than any other arm or service, the mounted force has undergone a marked evolution. The change is reflected in the professional periodical and professional organization which represent the special field. Within the framework of the major role, the transition has been paced editorially and organizationally in successive name changes, leading from Cavalry to Armored Cavalry to Armor. The continuity has hinged in the role.

Editors in the line of succession have kept the tempo of the advance, with circumstances dictating the rate of movement. Some periods may have been geared to a moderate pace. As Editor 26 looks along the back trail there is the unmistakable reflection of a sustained gallop. For this was the period of transformation from horse to horsepower.

Supreme Commander General Douglas MacArthur, writing from Tokyo on the 60th anniversary of the Magazine of Mobile Warfare, set the theme: "During these decades no other branch has experienced greater change in weapons, in tech-

nique, and in tactical requirement. Discarding the horse and saber to keep pace with the increasing tempo and violence of modern war, the cavalryman speedily adjusted himself to armored mechanization and commensurate fire power, firmly to hold his historic role of the far-flung and rapid movement echelon. In this he demonstrated with striking clarity that the invincible *esprit* which has characterized his past yet carries him to the vanguard of every advance, an irresistible force toward victory."

Sixty-five years. A quarter-hundred editors. Number 26 moves into the past. What better epilogue to satisfy a sense of history than a recapitulation from its pages?

1888-1890	1st Lt. Otto L. Hein
1890-1892	Capt. Camillo C. C. Carr
1892-1897	Capt. William H. Carter
1897-1898	1st Lt. T. H. Slavens
1898-1899	Maj. J. A. Augur
1899	1st Lt. Charles D. Rhodes
1900-1901	Publication suspended
1902-1904	Capt. L. C. Scherer
1904-1905	Capt. Matthew Forney Steele
1905-1907	Capt. Herbert A. White
1907-1918	Lt. Col. Ezra B. Fuller, Jr.
1919	Publication suspended
1920-1921	Maj. Robert C. Richardson, Jr.
1921-1924	Maj. Jerome W. Howe
1924	Capt. George A. Moore
1924-1927	Lt. Col. W. V. Morris
1927-1928	Maj. Karl S. Bradford
1928	Maj. K. G. Eastham
1928-1931	Maj. Oliver L. Haines
1931-1935	Lt. Col. George M. Russell
1935-1937	Capt. Charles S. Miller
1937-1940	Maj. Charles S. Kilburn
1940-1942	Maj. Fenton S. Jacobs
1942-1948	Col. Edwin M. Sumner
1948	Col. Wesley W. Yale
1948-1950	Col. Claude O. Burch
1950-1953	Maj. William Gardner Bell

These were the ones who were . . .

The Editor



Press Association

GROUND FORCE MOBILITY

by **BRIGADIER GENERAL PAUL M. ROBINETT**

Modern warfare is mobile warfare. The nation that acts on the lessons of history will field forces predestined for victory

IN a military sense mobility implies more than just mobility in equipment and in organization. It is also a state of mind. If it does not exist in the minds of responsible high level civilian and military leaders, mobility is impossible on the battlefield even though equipment and the organization of forces make it possible. The lack of mobility in mind will result in rigid, shortsighted plans and in sloth-like operations which will tend to degenerate into static situations. On the

other hand, mobile-minded leadership, lacking mobile weapons and organization and adequate logistical preparation for the execution of operations, can only develop unsound projects which will ultimately lead to disaster. So it is that static or defensive warfare is the refuge of mediocre civilian and military leaders and mobile warfare the pitfall of the incautious. These two possibilities are the scarlet threads that run through all of recorded military history.

The story of war is the record of an unending contest between the proponents of static and mobile concepts. Napoleon, for example, came upon the scene at a time when the armies of Europe had fallen into a fixed pattern and military operations were conducted in a sluggish, geomet-

ric manner. It was the end of the period of mercenaries. He adopted a revolutionary practice by developing military organization in an army of the masses which was capable of moving with great rapidity, of living off the country, and of striking with great violence at a decisive place and time. Napoleon was a genius of maneuver and, for a time, of logistics. In the end, however, he brought about his own ruin in pursuit of the elusive Russian Army beyond the limits of his mobility and in disregard of logistical considerations.

Another great disciple of mobility was Hitler. Taking advantage of the industrial potential of his country, of the military decadence of his neighbors, and of the disarmed status of Germany, he developed military or-

BRIGADIER GENERAL PAUL M. ROBINETT, retired, writes from the experience of a career in the mobile arm. Leader of a Combat Command of 1st Armored Division in the Tunisian Campaign in World War II, he is now Chief of the Foreign Studies Branch, Office of the Chief of Military History, U. S. Army.

ganization and equipment of great mobility and offensive striking power. Consequently, by 1939 all opposing ground forces were obsolete and ripe for destruction. But the Fuehrer was an impatient man and launched a series of lightning wars before his machine was fully built. He won some of the greatest victories of all time but to no avail. His obsession for mobility and his lack of comprehension of logistical considerations led him into the limitless depths of the Soviet Union without having taken the precaution of preparing for a winter campaign; led him beyond the capabilities of his mobile forces, and ultimately to his doom. Hitler entered upon this venture with less than 3,500 Mark II, III, and IV tanks while, Guderian estimates, the Soviets had 17,000 tanks in 1937 and had increased the number by the time the campaign opened on 22 June 1941. But the great surprise to the Germans was the appearance of the superior Soviet T-34 tank near the limit of their penetration.

Interesting examples of offensive mobile-minded high commands, lacking the means for mobile operations or the ability to concentrate those available, were those of France and of Germany at the beginning of World War I. The high commands of both nations had decided upon the offensive and each of them attempted to launch a great attack at the outbreak of hostilities. The French forces were quickly thrown back and were fighting for existence in a series of retrograde actions. On the other hand, the German high command, although tactically successful, lacked energy and weakened the enveloping forces by detaching elements to the east and by failing to mass the cavalry on the exposed right flank. It soon lost the ability to continue the offensive and was forced back upon the defensive. It had hoped that by repeated limited objective attacks it could hold the initiative and eventually wear down and destroy the Allies in the west. But it failed completely when the weight of the United States Army tipped the scales against Germany. Genius was lacking on both sides during the prewar planning and organization of forces and in the actual employment of existing mobile forces in the conduct of operations.



Library of Congress
Napoleon

The possibilities of mobile warfare were not fully tested in World War II because of a lack of imagination in the preparation of plans and in the organization of forces. The chiefs of the various military establishments and their principal staff subordinates were of traditionally conservative mold—some more than others. In Great Britain, France, and the United States the idea of mobile warfare was not welcome. There were some advances in mobility but its advocates, particularly in Great Britain and France, had no official part in the preparation of either plans or forces. Many advocates of mobility, notably Fuller, Liddell Hart, and De Gaulle, were to have more influence in the enemy camp than in their own lands. In Germany, Guderian's ideas of mobility were no better received in the General Staff. On gaining control in 1933, Hitler quickly adopted



Captured German Photo
Hitler

the idea of mechanized warfare, but his administrative organization was inefficient. Finally, he was lured into precipitate action by the prospects of quick and sure tactical successes but with the Panzer command still in an incomplete state and its destructive operational possibilities imperfectly understood. Although improvements were made and Panzer corps and armies were created, the German armored force was never as fully developed as mobile-minded commanders, such as Guderian, planned, but remained a makeshift substitute to the end. It was so because Hitler made twenty-five Panzer divisions out of ten without increasing his tank strength proportionately. Neither did German invention and production ever match Hitler's requirements, which were far greater than he envisaged. Thus he won only tactical successes and eventually suffered an annihilating defeat. The mobile-minded Fuehrer came to his tragic end still commanding imaginary mobile forces, which in reality existed only on paper.

In the United States mobile-minded men were denied responsible posts in the War Department. They had no part whatsoever in planning the World War II Army or in formulating strategic plans for the employment of the Army. German blitz successes in Poland were rather lightly regarded, but the fall of France, under the crushing blows of Kleist's and Guderian's Panzer forces, made a profound impression. However, the basic reasons for the German victory in the west were not well understood. It resulted from a strategic surprise, from the speed and violence of the attack by massed and coordinated Luftwaffe and Panzer forces on a narrow front at the point of main effort, from the speedy exploitation of the breakthrough, and from the relentless pursuit of the broken Anglo-French armies.

Following the German successes in Western Europe, the Armored Force, with almost autonomous authority, was quickly created by the War Department on 10 July 1940 and General Chaffee, a long-time advocate of mobile warfare, placed at the head. He had the vision so lacking in the War Department, but death intervened and his grand idea was soon blighted by less imaginative minds. The crisis in Europe having amelio-



Martel

British Official

rated, the traditionalists in the War Department reverted to form. Effort and means that should have gone into the creation of an offensive mobile force of armored corps and armies were squandered in developing inefficient antitank organizations and equipment. Some of the latter, as for example a 37mm gun mounted in the tail end of a light truck and a 75mm gun mounted in the front end of a halftrack, although probably adopted only as stopgap equipment, were retained too long and proved useless and sometimes even tragic to the little band which fought the meeting engagement with German troops in Africa. Yet it cost many millions of dollars and, most unfortunately, represented the squandering of military personnel, of strategic materials, and of labor on defensive organizations. This violation of the principle of economy of force and of means, together with others, could have been responsible for our defeat had the balance been more closely drawn than it was.

Finally, when Germany culminated a blitz through the Balkans by seizing Crete with airborne troops, the War Department, not knowing the exorbitant cost of the apparent victory in blood and matériel, created an excessively large airborne force—the most costly and the least mobile form of ground troops. But worse still, these units were allowed to recruit the adventurous, dynamic, mobile-minded personnel from the Army. This tended to reduce the quality of the infantry, armor, and artillery personnel because the Air Forces got first choice.

In the European Theater the lack of mobile mindedness in the War Department was equally apparent in Allied Force Headquarters and in 12th Army Group Headquarters. All of the principal commanders and staff officers assigned to these two important headquarters were soundly based in traditional broad front operations by infantry. The concepts of battle and of logistical support originating in these headquarters displayed a uniform lack of imagination in concepts of mobility. A mobile-minded subordinate, General Patton, frequently achieved limited successes by circumventing his superiors, but he was not even able to destroy the German Fifteenth Army which extricated itself from France, established a defensive position, and inflicted very



De Gaulle

heavy casualties before being driven out.

General Chaffee had envisaged a mobile force including armored corps and armored armies. But before the battle was joined the armored corps was abandoned and all ideas of armored armies discarded in favor of a more even distribution of mobile troops throughout the field forces. For example, during operations in Europe a typical American corps included one armored and two infantry divisions and, in time, each infantry division included one or more separate tank battalions. Such an allotment of armored elements did not materially increase the mobility of infantry divisions or corps. But, on the contrary, it precluded the creation of efficient armored corps and armies

capable of cross-country mobility in all their parts. This inevitably led to operations on a broad front with lack of armor concentration at points of main effort. Consequently, the Anglo-American campaign in the West was a conventional operation in which superior numbers of men and equipment overcame a failing enemy, hopelessly thrown back everywhere upon the defensive. The possibility existed for a classical and speedy victory of enormous proportions. But this would have required the concentration of a highly mobile armored army on the right flank, backed with adequate logistical support both on the ground and from the air. The actual performance of General Patton's Third Army on the right flank during its drive across France furnished only a hint of what might have been accomplished by an adequately supported armored army on that flank. General Patton was mobile-minded but his army was only a typical American army, not an armored army, and lacked the necessary logistical support from the air and on the ground. This support could have been furnished had higher staffs been mobile-minded in sufficient time to prepare the means. Little could be done by improvisation.

A contributing factor to the mediocrity of the Anglo-American victory in Western Europe during World War II, one which clearly indicated the lack of mobile mindedness, was the multiplicity of overstaffed headquarters in the chain of command and the excessive control exercised by these headquarters. From the divi-



Liddell Hart

U.S. Army



Fuller

British Official

sions and corps, the chain extended back through army, army group, and Allied Force to the Combined Chiefs of Staff and the Chiefs of State—Churchill and Roosevelt. This, however, does not reveal the real situation: because various headquarters had deputy commanders the practical effect was to still further lengthen the chain of command. Overstuffed staffs tended to slow down decisions, to retard the flow of information, and to delay the transmission of orders. Illustrative of overstaffing was General Eisenhower's headquarters which included more than 16,000 officers and enlisted men during operations and more than 30,000 by the time the occupation of Germany was under way. The troops serving under such command arrangements were not even capable of the mobility inherent in their equipment and organization. Sloth-like operations and a tendency to fall back upon the defensive inevitably resulted and were generally overcome by the initiative and resolution of troop leaders near the front.

American planners would do well to turn to history for a few basic principles concerning staffs rather than blindly accept the World War II pattern. Von Steuben was a capable general staff officer. He sums up his experience as follows: "My observation is where one person is found adequate to the discharge of a duty by close application, it is worse executed by two and scarcely done at all by three." Still later, General William T. Sherman, the outstanding Army commander of the Civil War, severely criticised large staffs in these

words: "A bulky staff implies a division of responsibility, slowness of action, and indecision, whereas a small staff implies activity and concentration of purpose." The severest criticism of an overlengthened chain of command has been made by the profound student of war, Clausewitz, who has said: "... an order loses in rapidity, force, and exactness if the graduation ladder down which it has to descend is long. . . ." Even if allowance was made for the simplicity of warfare during the days of Von Steuben and Sherman, little justification can be found for the excessively large staffs during World War II. Their conclusions still apply. Something must be done to prevent the staffs from degenerating into intellectual boondoggling. There are de-



Chaffee

U.S. Army

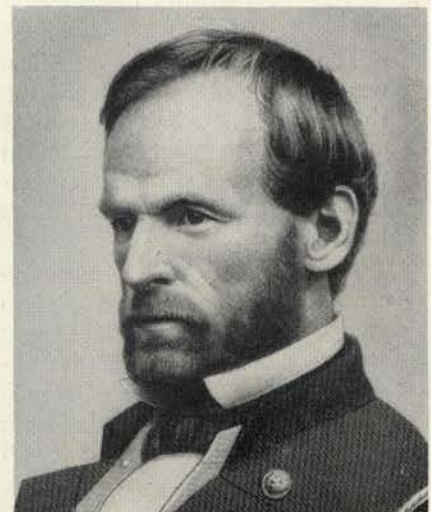
grees of refinement in staff work which go far beyond the practical requirements of the armed forces and a marked tendency for intellectuals to worm their way into such work. This tendency should be resisted in order that the intellectuals may shoulder their full responsibilities as fighting men and leaders.

Sufficient information is not yet at hand to fully analyze the Soviet performance in Eastern Europe but enough information is available to indicate that the Communists' performance on that front was rather mediocre considering the means at their disposal, the nature of the terrain over which the fighting took place, the determination of Hitler to hold ground, and the weight of the ground and air effort of the Allies

from the West. With a few exceptions, notably the Russian breakthrough and advance to Warsaw in the summer of 1944, the Soviet effort was little more than a methodical advance on a broad front during which German resistance was simply ground underfoot.

The American situation following World War II was that of a victor with all the advantages and disadvantages that usually accrue to a nation under such circumstances. Having destroyed the menace posed by the German and Japanese war machines, with the help of allies, it found itself one of the two remaining great powers. Unlike the other, however, the United States, while retaining the atom bomb, abandoned its armed forces and lost, through improper storage, or scrapped its military equipment. On the other hand, the Soviet Union retained its armed forces and equipment and adopted a line of action diametrically opposed to that of its former associate. As a result of these opposite decisions, preponderance of force almost immediately passed to the Soviet Union and led it to become increasingly belligerent in all its actions. To rectify the imbalance it had itself created, the United States was forced to expand its armed forces and to initiate an enormous re-armament program. Herein is found the opportunity of all nations which build their military organization and armament last.

Following World War I, Germany was stripped of armament and denied the right to build certain types such as tanks and airplanes. On the other



Sherman

Library of Congress

hand the Allied nations retained old armament and expended little upon new developments. When Germany rearmed, it took advantage of considerable research into the weapons of other armies but neither copied the old ones they had been compelled to abandon nor the new ones of other nations. It developed weapons and organization with which to destroy the armed forces of its prospective enemies. Following World War II the United States demobilized its armed forces and scrapped about 80 per cent of its equipment while the Soviet Union retained the mass of its equipment. Consequently, it created for the United States the same advantage that Germany had following World War I. Taking a lesson from German experience, military forces and equipment retained by the Soviet Union could have been rendered utterly obsolete by developing a more flexible and mobile organization with superior weapons. When caught in a predicament such as that of the United States, however, the natural tendency is to develop quickly the military organization and equipment necessary to counter the enemy rather than those intended to defeat and destroy him. This natural tendency is, therefore, defensive and static and not offensive and mobile and should be avoided.

There is already certain evidence to show that American civilian and military leadership has followed the natural tendency and has lost faith in the most mobile ground weapon—the tank. In this connection we need only recall the statement of Secretary of the Army Pace to the West Point cadets on 6 June 1950:

The principles of the recoilless weapon, the bazooka, and the shaped charge are being developed to a point where the mechanized panzer blitzkrieg will play a much less decisive role than it did in the last war.

Adding to those the more recent developments with regard to guided missiles and rockets, target seeking equipment, and the possibilities of tactical use of atomic weapons, it may well be that tank warfare as we have known it will soon be obsolete.

In addition to official pronounce-



Patton

U.S. Army

ments indicating a loss of faith in mobility and the mobile arm, the post-war field exercises have written out this lack of faith on the ground. There is, however, evidence to show that our leaders have put their faith in airborne troops which some of them consider to have the highest order of mobility. General Bolte has said that our objective is airborne armies. But an analysis of the facts will show conclusively that airborne troops are the least mobile of all ground fighters, although primarily for offensive warfare and tied to other ground elements. For example, on several occasions in World War II, it was planned to use airborne troops but ground elements had already seized the objective before they could be launched. Unless carefully coordinated with armored elements, airborne troops are inevitably drawn into piecemeal action at a time when they are bruised,



Guderian

Wide World

battered, and confused by the landing. At the very best they are but light troops incapable of sustained action or of standing against heavily equipped, mobile ground troops. There is a role for airborne troops, but it is not to win wars by themselves. Such troops are of highest importance to armored corps and armies in seizing defiles and airfields essential for rapid sustained operations and in partisan activities behind the enemy's front. Airborne and armored elements and air forces must be trained together continuously if they are to function efficiently as a team.

The defensive mindedness of our current leadership has led to the parcelling out of mobile armored troops and of permanently tying them to the capabilities of foot soldiers having only a nylon suit and a steel helmet to protect them from enemy fire. This dispersal of the mobile elements of the Army will lead to static actions on a broad front and, even if successful, will result in position warfare based upon mobile equipment, fire power, and manpower. This is just as fallacious as the passive defense based on field fortifications, obstacles, mines, and fire power such as the Maginot Line. Decisive results can never be achieved by such immobile measures.

If the United States abandons the dominant principle of mobility in favor of the static concept, it will forfeit its best chance of winning the next great war. It lacks the necessary manpower for such a concept. Besides, such a concept would be faulty even if the manpower were available. If the genius of the American people is fully employed in developing the forces required to win the next war, advantage would be taken of their mechanical ability and productive capacity. This would lead to the organization of armored, full-tracked corps and perhaps armies capable of being operationally and logistically supported from the air and of operating in the great plains areas of the world towards decisive geographical, political, and production centers without regard to frontiers or linear defenses established by the enemy and would lead also to the organization of light troops capable of effecting the final subjugation, occupation, and administration of territories overrun by the

mobile army.

The modern mobile army should be capable of operating logistically from landing areas in much the same way that fleets operate from naval bases. Advance into hostile territory should be from landing areas to landing areas and operations should be extended from such areas as bases. Such an organization, coordinated with a dominant and properly constituted air force capable of all support missions including the delivering of essential airborne troops and the atomic bomb, could overwhelm any armed force that exists in the world today. With it the true genius of our native military leadership would rise again to the level set by General Grant and his mighty team of Meade and Sheridan in the east and Sherman in the west and south. In cooperation with the blockading fleets at sea this combination brought the Civil War to an end. A proper mobile force, with up-to-date support in the air and on the sea and with the guidance of gifted leaders, might again take the risk, incident to a deep penetration into the enemy's heartland, that Sherman took, and would reap an even greater harvest. The logistical plan for Sherman's operation contemplated living off the country, but his wagon train carried the minimum requirements necessary to reach a base at Savannah, Ga. That was the reserve that reduced considerably the risk he took.

It is the historical example that needs careful study by those who would fully exploit the possibilities of mobile warfare in this era of cross-country tracked vehicles, airplanes, guided missiles, and atomic bombs. Air power has made it possible for an armored force, completely mounted in cross-country fighting vehicles, to operate on land in much the same fashion as an air-supported fleet operates on sea. This modifies the orthodox concepts of linear or broad front tactics and of secure lines of ground communications in war.

The problem of combining air power and mobile ground forces into an offensive team is the challenge that confronts American military leadership in the dangerous days that lie ahead. This is the combination that can relieve the infantry of the bloody battles of broad front operations.

THE NEW EIGHTH ARMY COMMANDER



U.S. Army

Lieutenant
General
Maxwell D.
Taylor

Maxwell Davenport Taylor . . . born in Keytesville, Missouri in 1901 . . . Attended Kansas City Junior College . . . graduated from USMA, June 12, 1922 and commissioned a second lieutenant in the Corps of Engineers . . . assigned to the Engineer School, Fort Humphreys, Virginia . . . upon completion of course transferred to the 17th Engineers, Camp Meade, Maryland . . . assigned to Schofield Barracks, Hawaii with the 3rd Engineers and became aide to the Commanding General of the Hawaiian Department . . . assigned to the 6th Engineers at Camp Lewis, Washington . . . transferred to the Field Artillery in July, 1926 and assigned to the 10th Field Artillery . . . assigned to Paris, France to study French in preparation for service at West Point . . . in September, 1927 assigned to the Academy as instructor of French and assistant professor of Spanish . . . he entered The Artillery School at Fort Sill, Oklahoma in 1932 and upon completion was immediately ordered to the Command and General Staff School, at Fort Leavenworth, Kansas . . . stationed with the American Embassy at Tokyo as a student of the Japanese language . . . in September, 1937 detached for duty at Peking, China as assistant military attache . . . returned two months later to his post in Tokyo . . . enrolled in the Army War College, Washington in 1939 . . . upon completion he was detailed to the Latin American countries on a special mission concerning hemisphere defense . . . assumed command of 12th Field Artillery Battalion at Fort Sam Houston, Texas . . . assigned to the Office of the Secretary of the General Staff . . . in July, 1942, transferred to Camp Claiborne, Louisiana as Chief of Staff of the 82d Infantry Division . . . instrumental in organizing the first Airborne Divisions of the Army, becoming artillery commander of the 82d Airborne Division . . . went overseas with 82d in March, 1943 and took part in Sicilian and Italian campaigns . . . during Italian campaign he was senior U. S. member of Allied Control Commission in contact with Italian Government . . . appointed Commanding General, 101st Airborne Division in March, 1944, which he led in the airborne invasions of Normandy and Holland and campaigns of the Ardennes and Central Europe . . . appointed Superintendent of USMA in September, 1945 . . . assigned as Chief of Staff, EUCOM in January, 1949 . . . became U. S. Commander of Berlin the following September . . . appointed assistant Chief of Staff for Operations at Army Department Headquarters in February, 1951 . . . became Deputy Chief of Staff for Operations and Administration of the Army . . . appointed Commanding General of Eighth Army in Korea in February, 1953.



Woltz Studio

The Armor Association Meets

The Program

Honors for visiting general officers in front of the Headquarters Building, The Armored Center, at 8 A.M.

Address of welcome by Maj. Gen. John H. Collier, commander of The Armored Center, in Theater Number 1.

Opening of the 64th Annual Meeting by Lt. Gen. Willis D. Crittenger, president of the Armor Association.

Introduction of and pace-setting address by Lt. Gen. Edward H. Brooks, Commanding General of the Second Army.

Business session, including the annual report of the Secretary-Treasurer-Editor and election of officers.

Impromptu panel discussion moderated by Maj. Gen. Bruce C. Clarke, the volunteers discussing modern warfare.

Dedication of the Court of Honor at the flagpole before Post Headquarters, with address by Gen. Collier.

Assembly in Sadowski Field House and introduction of the principal guest speaker by Gen. Crittenger.

Feature address by General Jacob L. Devers, Chief of the Armored Force in the period 1941 to 1943.

Demonstration by Army Field Forces Board Number 2 of the latest armor and engineer equipment.

Reception and dinner with brief talks by distinguished guests, including Army G4 Lt. Gen. W. B. Palmer.



a feature folio

The Proceedings
The Feature Address
The Annual Report
The New Council
The Court of Honor
The Salutes

through page 23



Woltz Studio

The Sixty-fourth Annual Meeting of The United States Armor Association

ATOMIC firepower will not eliminate armor; it will supplement and improve it, and require it for delivery."

With that phrase, General Jacob L. Devers, delivering the principal address before the 64th Annual Meeting of the United States Armor Association at Fort Knox, Kentucky, on Friday, January 30th, confirmed the past and certified the future of armor.

The World War II Armored Force commander was one of a large group of professionals on hand for the yearly gathering of the organization of mobile warfare.

Assembled in Theater Number 1 at the Home of Armor for the morning session, including the business meeting, were some 400 members of the Armor Association, from all parts of the country, including many of the top figures in the field as well as a cross section of all ranks—the backbone of the Armor branch.

Upwards of a thousand members on duty around the world were represented by proxy, combining with those present to constitute well over the quorum requirements.

Among those attending, in addition to General Jacob L. Devers, were Lieutenant General Willis D. Crittenberger, Retired, president of the Armor Association; Lieutenant General Geoffrey Keyes, Director of the Weapons System Evaluation Group; Lieutenant General Edward H. Brooks, Commanding General of Second Army; Lieutenant General Wiliston B. Palmer, Assistant Chief of Staff, G4, Department of the Army; Major General Hobart R. Gay, Commanding General, VI Corps; Major General John H. Collier, Commanding General of the Armored Center and School; Major General Bruce C. Clarke, Commanding General, 1st Armored Division; Major General Donald W. McGowan, Commanding General 50th Armored Division, N.

G.; Major General John B. Wogan, Retired; Major General R. W. Stevens, Commanding General, 3d Armored Division; Brigadier General R. L. Howze, Assistant Commandant, The Armored School; Brigadier General L. L. Doan, Assistant Division Commander, 1st Armored Division; Brigadier General Clayton P. Kerr, Assistant Division Commander, 49th Armored Division, N. G.; Brigadier General Harry H. Semmes, USAR, World War I Tank Corps member; Colonel William P. Withers, president of the Armor Development Board; Colonel Welborn G. Dolvin, Combat Arms Section, Research and Development Division, G4, Department of the Army; Colonel Robert J. Icks, Ordnance USAR, author of the book *Tanks and Armored Vehicles*; Colonels M. W. Frame and E. C. Doleman of the Armor Section of Command and General Staff College; Lieutenant Colonel Edward Bautz, Jr., Office of the Armor Inspector,

OCAFF; Major L. W. Wright, Aviation Officer, 1st Armored Division; Garrett Underhill, writer and Soviet Armor authority; Quintas Frederickson, president of the 7th Armored Division Association; Major William G. Bell, Secretary of the Armor Association and Editor of AMOR; and many other members of Armor of all components—Regular, Reserve and National Guard—including student, staff, troop and faculty personnel.

Major General John H. Collier, Commanding General of the Armored Center and host to the meeting, opened the day's program and the morning session with a warm welcome and the introduction of Association president Lieutenant General Willis D. Crittenberger.

General Crittenberger, in turn, introduced Lieutenant General Edward H. Brooks, Commanding General of Second Army, who set the pace for the day with a dynamic appeal for consideration of massed armor organizations in place of smaller tanks units scattered among infantry divisions.

Declaring that in an all-out war, armored corps, and if necessary armored armies, should be used, General Brooks said, "We can't afford to scatter our shot in an all-out war with a major power." He went on to express the need for consolidation of tank units in order to force, and prosecute, a war of movement to an early and successful conclusion, pointing out that "only massed armor can provide the fast, hard-hitting, destructive mobile force and firepower which can

SOME OF THE SALUTES FROM AROUND THE WORLD

When the 64th Annual Meeting of the Armor Association was called to order, many of its members who were unable to be on hand were represented by salutes sent forward from posts around the world perimeter. Many friends of the Association also sent messages. Among those from whom cordial salutes were received:

LT. GEN. I. D. WHITE
and the Armor personnel of X Corps

MAJ. GEN. GUY V. HENRY, RET.
Canadian-U.S. Joint Defense Board

MAJ. GEN. ARTHUR G. TRUDEAU
and the 1st Cavalry Division

BRIG. GEN. WILLIAM J. BRADLEY
Asst Div Cmdr, 1st Cav Div

COLONEL BRIARD P. JOHNSON
and CCB, 2d Armored Division

COLONEL HOWARD SNYDER
and the 6th Armored Cavalry Regt

HANSON W. BALDWIN
Military Editor, *New York Times*

MAJ. GEN. ERNEST N. HARMON, RET.
President, Norwich University

MAJ. GEN. GEORGE W. READ, JR.
and the 2d Armored Division

MAJ. GEN. ALBERT SIDNEY JOHNSON
and the 49th Armored Division, NG

BRIG. GEN. JOHN C. MACDONALD
MAAG, Formosa

COLONEL W. E. ECKLES
and the 2d Armored Cavalry Regt

COLONEL RAYMOND W. CURTIS
and the 14th Armored Cavalry Regt

GEORGE FIELDING ELIOT
Military writer and commentator

Unfortunately space does not permit publication of the warm expressions which were presented to the assembled membership at the annual meeting.

strike deep within the enemy's positions, disrupting his communications, disorganizing his reserves, destroying his artillery and defeating his armor."

Moving into the business session, the Executive Council took the stage and the president called the meeting to order. Present on stage were Generals Devers, Crittenberger, Keyes, Brooks, Gay, Collier, Clarke, Semmes and Kerr (substituting for General Albert S. Johnson); Colonels Polk and Dolvin; and Major Bell.

The reading of the minutes of the previous meeting was dispensed with, and the Secretary then read the Annual Report (which appears elsewhere in these pages) covering the financial and general affairs of the Association.

Acceptance of the Annual Report was followed by the consideration of a slate of officers for 1953. General Collier, Chairman of a Nominating Committee appointed in September and including a Guardsman, Major

The Speakers



Gen. Devers



Gen. Brooks



Photos by Ft. Knox PIO
Gen. Crittenberger

General Donald W. McGowan, and a Reservist, Colonel Herbert H. Frost, took over the chair to read a proposed slate of candidates for nomination. One open position was filled by a nomination from the floor. The election of officers followed with the slate as proposed being carried unanimously.

There being no further business, General Crittenberger extended to General Collier, and the Armored Center, School and Board, the warm appreciation and thanks of the entire membership. The business portion of the meeting was then adjourned.

A new feature of Association meetings got under way next when General Crittenberger introduced Major General Bruce C. Clarke to preside over a strictly unrehearsed panel discussion. General Clarke, in taking the podium, called for twelve volunteers in the audience, below the grade of colonel, to fill the seats vacated by the Council. At the same moment, the entire group was receiving a set of prepared questions covering various phases of warfare—tactics, strategy, organization.

One lieutenant, three captains, two majors and six lieutenant colonels took the stage where, with General Clarke as moderator, each spoke extemporaneously on his personal choice of questions for a period of five minutes. At the conclusion of the hour, the podium was made available to several volunteers from the audience to discuss the thoughts expressed by the panel.

The panel discussion served as a fine illustration of professional qualification. The manner in which the volunteers stepped forward to express themselves on a variety of subjects with no preparation of material or thought was a tribute to the participants and the group they represented. The tremendous interest generated by this highly successful feature assures its perpetuation.

From Theater Number 1 the scene now shifted to the Parade Ground and the dedication of the Court of Honor.

In the postwar period, the veterans of the several armored divisions active in World War II, desirous of maintaining the worthwhile ties developed during wartime association, formed separate division organizations. The respective armored division associations, never forgetting the comrades who failed to return, several years ago put in motion a plan to honor them. The result of their planning was the Court of Honor, fittingly dedicated at the Armored Center on the occasion of the Armor Association annual gathering.

The Court of Honor consists of a series of plaques grouped about the flagpole near the Center Headquarters and representing the sixteen armored divisions of World War II. In an impressive ceremony, under the guns of six M47s, and with an honor guard and band, the plaques were unveiled following a dedicatory address by General Collier.

Over 1600 officers were assembled

at Sadowski Field House for the opening of the afternoon session of the Association meeting—the feature address of the day-long program, by the man who guided our Armored Force in the critical early days of the late war; who went on to command the Sixth Army Group in the European Theater; and who, as commander of Army Field Forces in the postwar period until his retirement in 1949, had a close association with the projection of armor in our Army.

General Devers opened his remarks with an appropriate historical setting of the armor picture. Pointing up the integration of the fighting ground forces which took place at Fort Knox, and reviewing the personalities and organizational steps which had centered there, he moved in on the basic principles. "The combat soldier," said the former Field Forces commander, "has a profession second to no other profession of mankind. No longer can it be said that the skills of the other professions require more intelligent or more highly educated men—for there is no greater skill than that required to stay alive on the battlefield and at the same time carry out the mission of defeating the enemy—performing this task in all kinds of weather and under all kinds of conditions. Each man is a potential leader of himself, then of a team, and then of many teams."

Stating that armored divisions "are not obsolescent in any sense of the word," General Devers went on to say that atomic firepower, rather than eliminating armor, "will supplement and improve it, and require it for delivery." He deplored the weight and cost of our present day tanks and questioned why we stick to our present design. "The turret is the weakest link and the tracks are extremely vulnerable and heavy."

Noting that in the "history of military operations the development of new equipment has dictated the evolution of tactics," General Devers outlined a family of air transportable armor equipment that reflected the marriage of aircraft and ground equipment design. "It is my belief that through such a design philosophy must come the next stage of the evolution of all military equipment and new concepts of ground force operations."



In Theater No. 1 a portion of the Association members are seen listening with interest as volunteer panel members on stage discuss armor and modern warfare.

"Since the days of Van Voorhis and Chaffee, when the principles of armored warfare were worked out and the necessary equipment was developed, there have, of course, been changes and improvement in equipment. But the overall methods of warfare have changed—and Armor is now faced with two problems that it must solve quickly and well . . . weight and mobility."

"Those of us," concluded General Devers, "whose prime interest is Armor must shake ourselves out of old grooves and make some radical changes to insure that quick thrust forward."

Following the feature address of the day, the scene shifted outdoors once again and to Army Field Forces Board Number 2 for a demonstration of equipment of all types, including tanks, trucks, special purpose vehicles and engineer equipment. From an introduction by Board president Col. William P. Withers, various of the project officers and section personnel described the equipment on view for the professional audience. This demonstration concluded the afternoon period.

The day's ceremonies were enjoyably capped with an evening dinner. Among several informal speakers were Lieutenant General Williston B. Palmer and Lieutenant General Geoffrey Keyes.

In a message to the Association, Lieutenant General Lyman L. Lemnitzer, Deputy Chief of Staff for Plans and Research, Department of the Army, made the following comment:

"The past record of Armor vividly emphasizes its potential. In this day and age, the advent of each new and more powerful weapon and accompanying changes in our tactical concepts of ground operations have served to increase our capability of exploiting decisively on the battlefield the mobility, firepower, and shock action which armor so generously contributes to our modern battle team.

"I can assure you that our research efforts in the Department of the Army are consistently and vigorously focused upon qualitative superiority in the matériel field. In this research and development field, armor is accorded a high priority in consonance with its battlefield potential. The new

tanks and other equipment which you will see demonstrated represent long strides toward our goal of providing our battle team with maximum striking power. Our research must and will insure that Armor is not handicapped in applying its decisive potential on the battlefield. Matériel superiority coupled with the initiative, the ingenuity, the determination and the courage of the American soldier—guided by the type of leadership that has characterized Armor in the past—will insure the success of our battle team in modern warfare."

The 64th Annual Meeting of the United States Armor Association was a great success. Not a little of its

success was due to the hospitality and arrangements of General Collier and the Armored Center, and the many agencies and individuals who contributed to the program, including notably Colonel Henry Newton and his committee.

Normal rotation and assignment changes permitted attendance of a group of members who were unable to be on hand last year; an annual turnover should see all members participating in one or another of the annual gatherings in the future. Bigger and better is the theme—aimed at the ultimate goal—that of insuring that American Armor is the best in the world.

A MESSAGE FROM LT. GEN. LYMAN L. LEMNITZER

Message of Lieutenant General Lyman L. Lemnitzer, Deputy Chief of Staff for Plans and Research, Department of the Army, to the annual meeting of the Armor Association, Fort Knox, Ky., 30 January, 1953:

I deeply regret that the press of official duties has precluded my attending the Annual Meeting of the Armor Association. Particularly do I regret missing the opportunity to meet and to associate with the distinguished leaders who are with you on this occasion—many of them are intimate friends of mine.

Despite my absence, I would like to convey a few thoughts to you. Anyone involved in Army planning as I am cannot help but react to the tremendous potential of Armor in modern warfare. The history of World War II emphasizes the decisive role played by Armor as a member of our battle team of combined arms and services. The Court of Honor which you are dedicating is a solemn tribute to those who contributed so valiantly to the past achievements of Armor.

The past record of Armor vividly emphasizes its potential. In this day and age, the advent of each new and more powerful weapon and accompanying changes in our tactical concepts of ground operations have served to increase our capability of exploiting decisively on the battlefield the mobility, fire power, and shock action which Armor so generously contributes to our modern battle team.

I can assure you that our research efforts in the Department of the Army are consistently and vigorously focused upon qualitative superiority in the matériel field. In this research and development field, Armor is accorded a high priority in consonance with its battlefield potential. The new tanks and other equipment which you will see demonstrated represent long strides toward our goal of providing our battle team with maximum striking power. Our research must and will insure that Armor is not handicapped in applying its decisive potential on the battlefield. Matériel superiority coupled with the initiative, the ingenuity, the determination and the courage of the American soldier guided by the type of leadership that has characterized Armor in the past—will insure the success of our battle team in modern warfare. I am confident that you of the Armor Association will successfully shoulder your responsibilities of leadership in attaining this objective.

Again may I express my regrets for my being unable to be with you. I am certain that each of you present will have enjoyed a most pleasant and profitable reunion.

The Annual Report of the Secretary-Treasurer-Editor

To the Members of the United States Armor Association:

Submitted herewith, as required by the Constitution, is the report of the Secretary-Treasurer-Editor, covering the general affairs of the Association for the year 1952:

GENERAL

The Association

The annual meeting of the Armor Association has great significance, not only as an occasion to review the year gone by, but as a vantage point from which to view the year ahead.

The Armor Association's Year 1952 opened auspiciously when on January 14th the Chief of Staff of the United States Army joined the largest annual gathering in the organization's history to deliver a major address of prime importance to mobile warfare and its specialists. General Collins' presence was at once a tribute to the past and an augury for the future.

The tremendous success of that 63d Annual Meeting generated an upswing in membership and set a pattern for coming years. The net result has been a desirable increase of attention to the status of membership in the Association rather than the somewhat detached feeling of being only a subscriber to a magazine.

Since the degree of activity of the organization is based to a great extent upon its financial condition, it is inter-

esting to note that receipts for the year just completed topped \$31,000. This was \$5,000 over 1951, \$15,000 over 1950.

The members of the governing body continued through the entire year to represent the membership through active and intimate interest in all Association affairs. Many activities were reviewed and discussed at a formal Council meeting on September 18th.

In support of the Reserve program, the Association initiated in 1952 a certificate award to outstanding senior cadets in the senior ROTC schools conducting Armor courses. Presentation was inaugurated at 1952 graduation exercises. This will be a continuing annual award.

At midyear the Association released its single civilian employee, thus placing its staff operation on a strictly active duty basis. The saving in salary was somewhat offset in the latter part of the year with the loss of the account of 11th Armored Division Association, whose affairs had been handled by the Armor Association for several years for a standard fee.

In the Fall of the year the termination of the Association's lease on space at 1719 K Street in Northwest Washington occasioned a move of the headquarters to new space at 1727 K Street, resulting in an unforeseen expense on moving and a slightly increased rent. The Association now occupies its fourth location in the Nation's Capital since the move there some twenty-three years ago.

Also in the Fall, a continuing bid by the Association of the U. S. Army and its *Combat Forces Journal* to draw the Armor Association and *ARMOR* into a merger produced a series of high level discussions among representatives of the respective ground arms associations, with no action on our part beyond the expression of views set forth editorially in the closing issue of the year.

In October, Major William H. Zierdt, Jr., joined the staff as Associate Editor preparatory to assuming the post of Secretary-Treasurer-Editor following an appropriate period of overlap.

The move of the Association headquarters into more desirable space, complemented by the purchase of two new typewriters and the completion of payments on a new Graphotype addressing machine, saw the Association's physical plant in excellent shape at the close of the year. Over a two-year period the organization has spread into double its former space at double its former rent while holding a steady business gain and turning out a consistently improving product and service. We're in business and we mean it. The facilities now available are capable of handling a substantial additional expansion.

The Magazine

In keeping with the trend, *ARMOR* magazine took on size during the year just completed. The first two issues ran at 56 pages; the next three were 64-pagers; and the last issue of the year was an 80-pager, first of its size since mid-1948 when a general trimming had been necessary to effect economy and improve quality.

Editorial policy in the year held to the main theme that

FINANCIAL REPORT

THE UNITED STATES ARMOR ASSOCIATION 1952

CASH RECEIPTS & EXPENDITURES

Department	Receipts	Expenditures
ARMOR Magazine	\$24,355.13	\$18,930.16
Book Department	5,142.63	3,666.34
11th Armored Division Association	1,694.36	
Income from Investments	180.68	
District of Columbia Sales Tax	2.78	3.49
Withholding Taxes & Social Security		308.12
Miscellaneous	19.01	160.92
Postage		946.45
Office Supplies		320.73
Stationery & Printing		1,021.94
Telephone & Telegraph		559.21
Machinery & Equipment		1,174.20
Rent		1,845.00
Salary		922.90
Transportation Allowances		755.00
Transportation Expense		64.73
Janitor Service		122.00
Maintenance & Repairs		147.30
Moving & Drayage		178.75
Electricity & Power		46.70
Petty Cash Expenditures		115.00
Bank Charges		4.25
	<u>\$31,394.59</u>	<u>\$31,293.19</u>
Bank Balance 1 January 1952	309.19	
Adjustment (Check Returned)	4.75	
Bank Balance 31 December 1952		415.34
TOTAL RECEIPTS & EXPENDITURES	<u>\$31,708.53</u>	<u>\$31,708.53</u>
Total Assets		\$9,632.67
Total Liabilities		763.93
NET VALUE of the Association (31 December 1952)		\$8,868.74

runs through our special field—the mounted soldier, the armored division, mobility in ground warfare—and the compelling need for an organization and magazine to represent it.

Entered once again in the American Institute of Graphic Arts annual Magazine Show, ARMOR repeated its 1951 award recognition with another Certificate of Excellence on the November-December 1951 entry, judged superior on three counts by a distinguished panel of judges from the editorial and publishing field.

During the year a total of 2,652 new subscriptions produced a net gain of 1,044 based on arbitrarily closed records as of December 31st. The magazine topped 5,500 paid copies for the first time, as against an estimated 1,800 paid copies being serviced at the close of the low period of the last decade, the year 1947.

The November-December issue, in size, content, authorship, layout, illustration and color, is a fair sample of a goal for levelling off in expense and quality. Sustained issue-by-issue gains during the coming year should allow similar issues as a goal, while yet providing an opportunity to strengthen the Association's financial base.

The Book Department

Book Department receipts almost doubled in 1952 over 1951. The margin of profit made possible by publisher discounts was an additional assist in publishing the magazine.

Top selling book of the year was Guderian's *Panzer Leader*.

Although still on a somewhat humble scale, this subsidiary activity of the Association holds a great potential. Increased use of this service by all members and their families will aid our overall operations to a substantial extent. For although fiction, juvenile and other unrelated items are not covered through the magazine's Book Department, any book may be ordered and supplied.

Handling of a number of selected items published overseas, and careful coverage of the significant books in the field of publication, as a professional service equally as much as with a profit motive, have contributed to ARMOR's reputation, as has a continuing series of feature criticisms by "name" reviewers.

With increasing financial capacity, a program of limited stocking of worthwhile books was begun in 1952, resulting in savings through increased discounts and reduced postage charges, while allowing a more prompt filling of customer orders. This will be extended with care and within reason in coming months.

SUMMARY

The points set forth here concerning all phases of activity add up to the fact that the Armor Association is a sound professional organization operating in a critical field, providing a valuable service for those who wish to take advantage of it. But so far as our professional family is concerned, the gap between Armor branch membership and Armor Association membership is great. Closing of that gap is a logical mission for the coming year. It is something in which the entire membership may join, secure in the knowledge that our aim as an Association goes well beyond a professional group, touching our Arm, our Army, and our Country.

ARMOR—March-April, 1953

THE NEW COUNCIL

The Armor Association's distinguished governing body for 1953 embraces the field of armor. It includes all components of the Army. Members symbolize armor from the World War I Tank Corps, through the formative days of mechanization, across the battlefields of World War II, and to the campaign in Korea. An important addition is the Council Advisory Boards for the two major theaters. In combination, by individual, by position and by location, the Council represents Armor!!!—ED.

Honorary President

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To be filled

To be filled

To be filled

before the United States Armor Association



Louisville Courier Journal

Address of General Jacob L. Devers

HERE at Fort Knox were developed great leaders of Armor—young and old—who brought order out of the chaos of ideas, equipment, and doctrine. Here the first integration of the fighting forces of the U. S. Army was conceived, went through its birth pains, and came out a team, coordinated in its simplest element and capable of accomplishing the impossible. The Infantry, Cavalry, Artillery, and Engineers discovered that they each had personnel who could command the others—that each was indispensable to the other—and that to be completely successful the fighting unit must also have the best possible supply services—that the unit was useless unless it was balanced with Signal, QM, Ordnance, and Chemical Warfare personnel—and properly supported by the Air Force and the Navy.

Here the Engineers developed the first successful rubber pontoon bridge. Here the Signal Corps learned that there must be better and simpler communications equipment. Here the Ordnance learned about power plants, maintenance, and spare parts. And here the Chemical Corps learned about the use of fire and the protection against gas.

It was here that the first light observer planes with civilian pilots—the Grasshoppers—were contracted for, in order to give eyes to Armor, Artillery, reconnaissance and command; and this act brought forcibly to the Air Command of the Army the necessity of thinking more about the combat soldier. The Armored Force—then the Armored Division—and finally the Armored Corps were born here.

In the Mechanized Headquarters at Fort Eustis, in 1931, General Van Voorhis, a Cavalryman with foresight and imagination, laid down the basic principles for the Armored Force. He was the wise prophet who looked into the future and saw the necessity of integrating the combat arms of the Service into a single team if Armor was

to be successful. He was the grandfather of Armor. Later, in 1940, General Chaffee, with a wide open directive from General Marshall, and with foresight and experience in organization, secured this post, created on paper and brought into being the Armored Force as you knew it during the war. He became the father of Armor. Out of this integration of the Services, came the young, aggressive leaders of Armor, each thinking only for the good of the whole.

Here was the first fighting combat team of the Army. If we could only have the foresight to put together today a similar fighting team of the Army, Navy, and Air Force—integrated and ready to go.

So much for history. It has a lesson and a theme song—and it has worked.

Now let me get back to basic principles—for it has been my desire and pleasure, since my retirement from the Army in 1949, to keep after greater fire power, better transportation, air transportability, and the logistics and economics that go with the fighting man. * * *

The combat soldier has a profession second to no other profession of mankind. No longer can it be said that the skills of the other professions require more intelligent and more highly educated men—for there is no greater skill than that required to stay alive on the battlefield and at the same time carry out the mission of defeating the enemy—performing this task in all kinds of weather and under all kinds of conditions. Each man is a potential leader of himself, then of a team, and then of many teams.

You of the Armor Association know how important it is to take a man, no matter where he comes from, and train him to take care of himself, his weapons, and his transportation. It is necessary to give him faith or confidence in himself and, within his capabilities, responsibility to fit him into a team. His weapons must be of the

best. They must be as light as possible and must have great fire power. This means that there must be a combination of weapons varying in weight and fire power to give him flexibility in their use under all conditions of combat. Transportation must be of the best in order to transport him, his weapons—both individual and supporting—and his supplies quickly and easily to the point of contact with the enemy.

The basic element, then, of a fighting team is the combat soldier. He is supported by all the arms and services including the Air Force and the Navy.

This combat soldier finally finds himself in what today we call a division. It may be an Armored or an Infantry or an Airborne division.

Just as most industry is tied to its machine tools, in its search for new ideas and new approaches—so you are tied, in your search for better solutions in perfecting the art of fighting, to a division or a combat team. As a result of this organization and training, the fighting leader is frustrated in his efforts to improve his fire power and mobility because of weights and costs of equipment, both of which continue to mount.

As long as we have the present divisions and the equipment, there will always be Armored divisions; they are not obsolescent in any sense of the word and no matter where the battleground is, or what the weather may be, there will always be tanks and they will play a dominating role. * * *

Atomic fire power will not eliminate Armor; it will supplement and improve it, and require it for delivery.

It is a source of great satisfaction to me that I have been able in the past few years to work with people outside the service who are seeking to develop equipment which will give to Armor a new flexibility. * * *

If the transportation now used by the Army, both as weapon and personnel carriers—particularly the tanks and the bulldozers—can be made lighter and still perform their present functions, then the whole concept of the divisional organization could be changed and would result in reductions in types of weapons, trucks, tanks, and tractors and considerable reduction in the amount of manpower required behind the combat soldier at the front.

The big problem is weight. Weight costs money initially, and later, in operations it inevitably limits the use and thus the flexibility of the weapons or vehicles and adds to its complications. * * *

Because of long experience in the development of tanks, their component parts, their maintenance, and the weapons and ammunition they carry, I have come to one fundamental conclusion which I believe is sound: The present tank carries around too much dead weight 90% of the time, costs too much initially, and costs too much to operate. Why do we stick to this design? With all its protection, the turret is the weakest link and the tracks are extremely vulnerable and heavy. In a matter of hours a tank column will destroy a million dollars worth of roads.

For some years, even back in 1941 and 1942, it was my opinion that we should go to wheels if possible. We even tried such a tank, but could not see the solution. We also tried to drive the tank with electric motors, but the design of the motors linked with the track approach was so heavy that it defeated the idea. Also, in those days we

did not know too much about waterproofing motors. * * *

In the entire history of military operations the development of new equipment has dictated the evolution of tactics. It is my belief that through . . . a design philosophy that reflects the marriage of aircraft and ground equipment design must come the next stages of the evolution of all military equipment and new concepts of ground force operations.

If progress is to be made, you, the leaders in the military art, must have enthusiasm and persistence and must be constantly looking for a new and realistic approach . . . In modern times, with new fire powers already developed and being still further developed, mobility is more important than ever. This mobility must have flexibility and simplicity. Divisions must be reduced in manpower size and still gain fire power; the Division slice now figures at 55,000 for an 18,000-man Division, and is really 90,000; it must be cut in fact to 20,000 for a 10,000-man Division.

With the daily improvements in electronics, and the know-how and training of the individual, the "impossible" can still be attained.

Remember the rule of Armor:

A hole—a quick thrust which might continue indefinitely—1,000 miles more or less—and gasoline more than ammunition becomes the need. When the momentum is slowed, then stopped, it may take weeks to get going again.

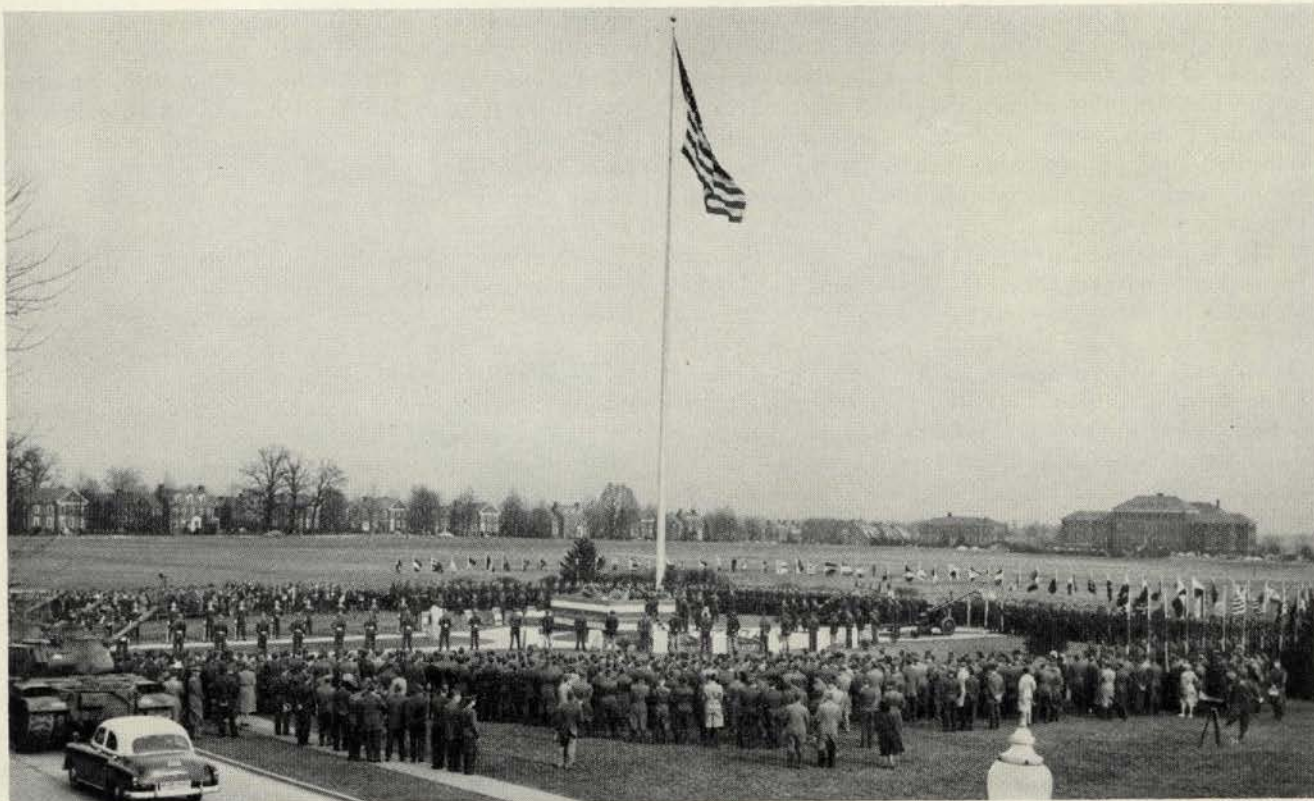
Command is easy because of the men who lead and because of the training beforehand.

Brief directions, a little coordination, plenty of supplies, the will and the permission to go and ultimate recognition of the good work accomplished. These are the responsibilities of the Commander. Results: Casualties—few. Small losses come from deliberate planning and violent execution.

Remember—any great stride forward in the history of civilization—anything revolutionary in art or industry, in physical or medical science—anything of note that has been developed in the past has, in its early stages, been called radical, extreme, far-fetched, advanced, visionary, and impractical. Even anything unusual—anything that does not follow a pattern—is viewed with skepticism or downright scorn. People are prone to view with suspicion anything they don't understand, even though it has been proved beneficial. Furthermore, people are creatures of habit and inertia, and it takes a lot of prodding to induce them to accept new methods to replace old. * * *

Since the days of Van Voorhis and Chaffee when the principles of Armored warfare were worked out and the necessary equipment was developed—there have, of course, been changes and improvements in equipment. The principles have remained essentially the same. But the overall methods of warfare have changed—and Armor is now faced with two problems that it must solve quickly and well—the problem of weight and the problem of mobility. [We must have] fire power and more fire power with better charges and fuses and better results at the end of the trajectory—mobility adapted to the air age with lighter equipment and lighter planes. * * *

Those of us whose prime interest is Armor must shake ourselves out of the old grooves and make some radical changes to insure that quick thrust forward.



Woltz Studio

Dedicated to Our World War II Armored Divisions

THE COURT OF HONOR

An appropriate event on the Armor Association program was the dedication of the Armor Court of Honor. Consisting of a series of bronze plaques set in stone and circling the flagpole on the Parade Ground before Armored Center Headquarters, the Court was dedicated in an impressive ceremony under the guns of six M47 tanks, with an Honor Guard and band, and the flags of the United Nations flying. Maj. Gen. John H. Collier made the dedicatory address in the program attended by many former members of the respective divisions, both active and non-active duty, and a distinguished group of visiting Armor greats.

General Collier's Dedicatory Address

We have assembled here . . . to pay tribute to the sixteen United States Armored Divisions which fought so valiantly in World War II. We hope that at some future date it will be possible to commemorate the other armored units, the Groups and Separate Tank Battalions, which contributed so much to the defeat of our enemies.

Following World War II a program of naming buildings in the

Armored School area for graduates who were killed or fatally wounded in battle was initiated. From this came the suggestion that armored units also be recognized by some form of memorial. After considerable exploration the idea of a Court of Honor was born.

Division Associations were contacted and were found to be enthusiastic, but in some instances, not sufficiently well organized to underwrite

a share of the cost. Nevertheless, the planning went on. By last November the necessary funds had been accumulated. The support of the Armored Division Associations has been commendable. Three of those associations are represented here today.

This Court of Honor is to serve both as a memorial and as a reminder. It is a *memorial* to those men of Armor who served this nation in the most vicious and costly war yet experienced by mankind. It is a reminder that Armor was, and is, the Arm of Decision.

In Africa, in the Mediterranean, in Western Europe, it was Armor that disrupted enemy plans and paved the way for destruction of Hitler's army. Without Armor it is debatable that our forces could have broken out of the beachheads. Certainly the liberation of France and the Low Countries would have been

a much longer and costlier operation had we lacked Armor.

Tripoli, the Falaise gap, the Ruhr pocket, and the Remagen bridgehead were hastened by Armor. The rapid advances east of the Rhine River were spearheaded by Armor, and sealed the fate of Hitler's regime. American armor played a leading role on two continents, the African and the European. In the Pacific, tanks were always in demand but islands were not profitable areas of action for large armored formations. Furthermore, international agreements dictated *speed* in ending the fighting in Europe. For these reasons the great mass of our armor was sent to Europe where speed was a major consideration.

When Poland was invaded by the Germans we did not have *one* armored Division. On V-E Day we had *sixteen* armored divisions, all in Europe. They stretched from the Mediterranean through Italy, Czechoslovakia and Germany to the Baltic. American armor, in truth, reached from sea to sea. It had fought on the beaches, in mountains, on the desert, on the plains. It had fought in sunshine, snow, and mud, but armor fought.

Armored divisions are a studied mixture of men and matériel. They are *balanced forces of the combined arms*. In no other ground formation do you find the fire power *man for man*, the shock action and mobility that is built into the armored division. The men whom we honor today, the living and the dead, served in the divisions that engraved upon the memories of friend and foe alike, the truism that *Armor is the Arm of Decision*.

Today, as in the years gone by, no one *arm* wins a war. But wars still, and for many years to come, will be won by the victors of a series of battles. It is on the battlefield that Armor, in the space of a few years, earned its heritage. Armor is a weapon of aggressiveness, of opportunity, of exploitation, *and of decision*. It has in one package both offensive and defensive capabilities.

Push-button warfare is still a hope, not a reality. Until that distant day when science overcomes the raw struggle of masses of men, against masses of men, wars will be won on the ground. Until that distant day

when the will of one nation can be made to dominate the will of an equally determined nation, through as yet undeveloped means, the balance of power must remain with the one possessing the ability to penetrate, disrupt and destroy the capacity to resist on the ground.

We have not yet attained that vaunted status where robots will do our fighting. We have not yet reached that pinnacle of science from which a few hidden artisans can, by the flick of a switch, eliminate armed resistance and the will to preserve those principles for which a human being is willing to die. We are still in the age of wars fought in the mud, the snow, blistering heat and numbing cold. We live in the era in which man and the machine can triumph over man alone.

The armored division is a combination of man and machine, but it is a mixture in which man is the heart and brain. Its iron fist is the tank. Its stamina is *man*. Its blood supply is generated by the organic

services which provide communications, ammunition, fuel, rations and medical support. Its ability to reach out and inflict casualties is augmented by the artillery. Its ability to "stick" is enhanced by the armored infantry. Its crossing of barriers is facilitated by the engineers. It is the best ground weapon to form the air-ground team. Its blending of the several arms and services makes it a weapon of victory.

The history of modern armor is relatively brief. The deeds of the men and the units we honor today have written many pages of that history. *Valor walked hand-in-hand with the means to do the job.*

We of the Armored Center have a duty, as soldiers and citizens of the United States, to carry on the heritage of those whose service to our country made possible this Court of Honor. We shall fulfill that duty.

It is in all humility, and while seeking the blessing of the Almighty, that I dedicate this *Armor Court of Honor*.



Former members of the 3d Armored Division flank the Spearhead plaque, one of sixteen unveiled in the ceremony honoring the World War II armored divisions.

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U.S. Army and Sovfoto

The Red Army in Atomic War

by COLONEL LOUIS B. ELY

IT is well known among most military men that the tendency toward excessive reliance on atomic weapons is dangerous. Yet in some quarters there is still an exaggerated idea of their power on the battlefield. This deficiency in thinking will not be remedied until the general outlines of atomic land warfare in the present military situa-

tion are set forth clearly and realistically.

A considerable amount of information has been published concerning the tactical principles of atomic land warfare. Likewise well known are the strengths and characteristics of the military forces which may be expected to engage in this type of war, that is, the armies which would fight

for the decisive area of Western Europe in the event of Soviet attack. With very little imagination the two fields of knowledge can be combined to establish the general nature of the operations to be expected in that crucial theater. Each of the contestants has atomic weapons available for use in the land battle. Each type of army, Communist and Western, has charac-

teristics which are advantageous in atomic warfare and each has attributes which can be serious deficiencies in such warfare. Some of the Western dreamers ignore the credits on the Soviet side and conveniently overlook the handicaps of their own forces. In their reveries a bomb bursts above a mass of Communist troops, the troops die and the war is over. Realism is needed.

A number of aspects of the Eastern forces, Soviet and satellite, will cause material difficulty to an enemy who seeks to use atomic missiles against them. Consider first mobility, one of the primary means of nullifying the new weapon. The commander who has located a possible atomic target, only to have it move on before he can make his decision and launch his missile, is balked. And the Soviet Army has demonstrated, even with its ill-trained forces of World War II, that when pre-set plans can be prepared and enemy opposition is weak, it is capable of rapid movement on a large scale. And the potential opponent which the Red Army now faces is far weaker numerically than were the Germans on their Eastern front.

In another characteristic highly valuable for countering atomic missiles the Eastern forces are unquestionably excellent. They are known to have the ability to fortify rapidly. A force which digs in before the enemy determines it to be a fit object for atomic attack escapes much of the effect of the burst, and frequently must be crossed off as an atomic target. A third outstanding quality of the Soviet forces tending to foil the new weapon is their high standard of camouflage training. By thus baffling the enemy intelligence the Red forces will throw delays into the use of the weapon, and during these delays may move elsewhere or dig in.

Often the exaggerators of the efficacy of the atomic missile dwell upon its psychological effect. This factor is undoubtedly great, but it must not be supposed that the surviving Red troops in the vicinity of the burst are going to break and run away. Soviet officers are authorized to apply harsh punishments to Red soldiers on the battlefield, and Communist troops are permeated with secret police, a fact of which the Ivans are well aware.

With U. S. troops dug in a bare two miles short of ground zero in the latest Nevada test, and atomic warhead fringing of the 280mm artillery gun on the schedule, we are ever closer to tactical atomic warfare's realities. With this view from the friendly side, what may we deduce in a consideration of an atomic clash with our only logical opponent?

But none of these Soviet capabilities in contending with atomic weapons compare with the major Red advantage, vast numbers of troops. The Communist forces can make manifold simultaneous attacks, some major and decisive, others merely initially powerful. The Western general will be faced with difficult decisions. If he misinterprets the feints he wastes his scarce missiles. If he misinterprets the decisive attacks his line may be breached before he can throw in his atomic shells or bombs. If he uses his missiles on all the attacks, even though with good fortune he stops them all, the Reds can bring up fresh divisions and repeat the assault. Suppose the Western weapons do cripple twenty or thirty Red divisions: the Soviet commander can draw upon some of the remaining three hundred or more to reconstitute his forces. Nor will all of the crippled divisions be permanently out of action by any means; a substantial proportion may be rebuilt by requisition on the many millions of trained Soviet reserves.

The advantages of the Communist forces in atomic warfare are thus seen to consist of their capability, under present circumstances, of moving

rapidly, their ability to fortify quickly and to camouflage well, their control of panic, and above all in their great numerical strength.

But the Red Army weaknesses against the atomic weapon are many and serious. They loom large in any estimate of the situation in the atomic warfare of today.

In spite of their ability to move rapidly when plans are pre-set, the Red Army's combat units are poorly organized and equipped for quick, unexpected movement. They lack the necessary personnel and trucks to pick up and move their numerous weapons promptly, nor is their communications equipment yet sufficient for this type of warfare. This ineptness in maneuver, which is highly disadvantageous in conventional war, is even more of a drawback in atomic battle. Delay in movement gives the Western commander more time to estimate the situation as to when and where to use his atomic weapons.

Another weakness of the Red Army in fluid, mobile warfare is the confusion caused by unforeseen situations. Its officers are accustomed to having their thinking done for them. There is great fear, on their part, of acting without orders. Between organic weakness in its combat units and lack of initiative in its leaders, substantial Red forces can at times be encircled by a strong opponent and perhaps compressed into a limited area and there blasted with atomic bursts. This use of the new weapon saves time and ammunition, and may permit the annihilation of the surrounded Red troops before their relief can be effected.

COLONEL LOUIS B. ELY, who served for some months as Chief of Technical Intelligence in G2, is author of the book *The Red Army Today* which will shortly be published in a revised edition to include a new chapter on the satellite armies. Col. Ely is now a member of the Secretariat of the State-Defense Military Information Control Committee.

The highly publicized weakness of the Red Army in massing troops for an assault on a fortified position is in some degree genuine. Many of the reasons for this unsound procedure are inherent in the Communist forces. In their armies a commander is held to immediate and rigid accountability for getting results. He tends to keep his troops concentrated for control purposes, particularly necessary in an army where communications equipment is somewhat scarce. Flexibility of Red fire power is poor, hence troops must be physically present in the immediate area of the assault in order to exert their massive fire power effectively.

It would, of course, be unsound to base estimates of the degree of concentration to be expected of Red troops in an attack, in the present situation in Europe, too closely on the assaults made by the Soviet forces in World War II. Mass was needed at that time to compensate for extreme deficiencies of training, and the need for concentration due to lack of communications equipment was more pronounced than it is now. Nevertheless, if confronted by at least moderately strong opposition the Soviet forces may reasonably be expected to concentrate on a scale of perhaps half that which was usual to them in World War II. Such an estimate would place a corps of three rifle divisions on a front of eight to

ten miles. Heavy atomic attack on such an assaulting corps, properly timed, in addition to inflicting many thousands of casualties, might change the situation from a Communist attack to a segment of temporary impotence in the Red line, presenting an excellent opportunity for a counteroffensive breakthrough.

On balance Red strength lies in the fact that they are not ideal recipients of atomic blows, while their weakness involves a limitation in ability to deliver such blows. Presumably the Soviet forces have fewer atomic bombs available for battlefield use than do the NATO powers. Presumed lack of an atomic artillery piece, the advantages of which will be discussed later, is a significant disability. But whatever steps the Reds may take to remedy these weaknesses, one of their inherent command defects is certain to be detrimental to their use of atomic weapons: the Communist incapacity to delegate authority. It is only logical to expect that within their armies the decision to use this scarce weapon in a given situation will be made only by the most senior Red commanders. Such a system must inevitably result in delays in the allotment of atomic missiles to specific areas of the battlefield or on specific targets. During the time-lag, the Westerns can move, disperse or dig in.

Red Army weaknesses in atomic

war are lack of mobility (except under pre-set plans with little opposition), ineptness in maneuver, inability of commanders to act without orders, necessity to concentrate in relatively dense formations for attack against serious opposition, presumed shortage of atomic missiles and lack of an atomic artillery piece, and the tendency to retain power of decision on high levels.

In comparison with the communist forces, the qualities of the armies of the NATO powers for waging atomic warfare are very high, and their disadvantages relatively few.

The primary element of their superiority over the Communists is one of long standing, the ability to attain dispersion while retaining combat efficiency. The West has continually sought means of avoiding the huge casualties which would otherwise be inflicted by the ever-increasing fire power of conventional weapons. This characteristic stands them in good stead as a point of departure in tactical doctrine for atomic war. Their methods of communication and control permit them to alternate quickly from the highly dispersed formations which prevent effective exploitation of atomic weapons by the enemy, to the closer concentration required for decisive action, and to re-disperse promptly as soon as the situation permits.

The Western capability of rapid movement and change of direction can alter the situation radically during the time the Red commander is taking the necessary steps to use his atomic weapon. Rapid movement onto the Red flanks or rear, or exploitation through a gap created by Western missiles throws a difficult problem onto the Communist commander. His enemy may strike him decisively before he can estimate the strength and location of the opposing main forces with sufficient certainty to employ his atomic missiles against them.

In addition to the advantages inherited from pre-atomic days, the Western land forces now entering the atomic era have promptly established another major superiority over the Communists by producing the atomic artillery piece.

Little reflection is required to become aware of the extreme value of this weapon. On the battlefield, when the Western ground commander de-



Red Army weaknesses include the inability of commanders to act without orders, and conversely the tendency to retain power of decision on high command levels.

cides upon an atomic target or group of targets, he can strike immediately with his gun before the target disappears or digs in. He can integrate the gun's action with the rapid operation of his troops.

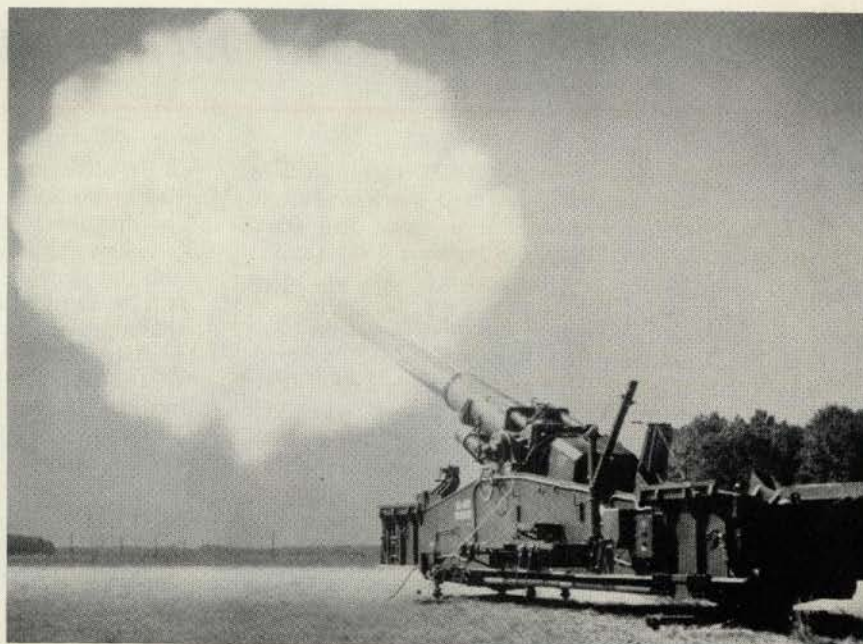
The accuracy of the gun is a tremendous asset, particularly at the decisive time when the opposing forces are closely engaged. The ground commander can strike all but the very foremost elements of the enemy without damage to his own troops. Accurate timing permits forewarning of his own front-line troops to enable them to take cover at the time of the burst.

A final major advantage of the gun is its independence of weather conditions or darkness. Without the gun (or an army-controlled guided missile) in his hands, the Western commander's atomic power could be largely cancelled by Communist forces operating during periods of poor visibility.

The atomic gun, of course, cannot be considered a long-time Western monopoly. The Soviets will surely make an atomic artillery piece, although it can be expected that their initial model will not match the American. And in technical artillery skill in controlling the fire of the piece, or a battery or battalion of atomic artillery, the Soviets will be unlikely to overtake the Westerners in the foreseeable future.

Another major advantage of the Western powers in atomic warfare is the superiority in numbers of atomic missiles which, by inference, they possess. In fast-moving situations, when the exact location of important enemy forces is particularly hard to determine, the Western commander may be able to risk the use of the new potent weapon when he is not completely certain that his proposed target is remunerative. Red reserves, moving to counter a fast action by a Western force, will be particularly difficult to estimate as to strength. The Western commander may subject such reserves to atomic attack merely to insure the success of the maneuver.

In the more stabilized situations the Western commander may have available sufficient missiles to support a breakthrough of a fortified position. The very difficulty of such a breakthrough being carried out quickly



The Soviets will surely make an atomic artillery piece, although it will not match the American gun, nor will the Reds equal our technical artillery skill.

U.S. Army

creates a surprise situation—a condition which the Red Army is not adept in meeting.

One more important aspect of atomic war favorable to the Western cause is its defensive role. To whatever extent the NATO forces plan to carry out this mission by position defense, their fortifications will afford a considerable degree of protection against Soviet atomic attack, and if well manned will present the Red forces with the problem of concentrating their troops relatively heavily in the face of numerous atomic weapons.

The land forces of the West have few weaknesses in atomic warfare. Their supply ports would be difficult to operate if crippled by atomic attack, and the alternative of unloading across beaches is expensive in manpower.

But overshadowing this and all other deficiencies of the Western powers in the present situation is lack of troop strength. Due to this condition many of the Communist weaknesses in atomic warfare must remain unexploited. The sensitivity of Red forces to disruption during rapid movement signifies nothing unless their enemy has sufficient troops to accomplish the upset. Much less are large bodies of Communist troops likely to be surrounded and compressed into atomic targets, for this requires considerable numbers of highly competent troops. Even the

now-standard dream of great masses of Communist troops advancing elbow to elbow against Western defensive lines has little validity unless these lines are manned in sufficient strength to force the Red leaders to such an action.

Nor does the lack of troops merely lose for the Western commanders much of their ability to kill or capture large numbers of Communists or to disrupt a rapid advance of the Red forces. It tends in addition to make futile any consideration of exploiting decisively the positive measures which the West could otherwise engage in. Swift movements against the flanks or rear of Soviet troops, unless in force somewhat commensurate with the bodies of troops attacked, are merely harassing raids. As for pouring through a gap in the Communist lines created by profuse expenditure of Western atomic missiles, the few troops available to "pour" would merely be swallowed up.

In summary, the Red Army is ill adapted by its nature to wage atomic warfare, and the Western type of force is well qualified. But in Europe today, the new weapon is merely a palliative in the ground situation of the NATO powers, and the Communist forces cannot be made to feel its full brunt unless sufficient conventional type combat troops are present to exploit its great potentialities.

"Mounted" Means a Difference

During and since World War II, the subject of soldier reaction in battle has had much attention. S. L. A. Marshall explored it in great and fascinating detail in his book *Men Against Fire*. Articles have appeared in many publications touching upon various aspects of the matter, a recent one in *Collier's* questioning why half our combat soldiers fail to fire their weapons in a fight.

In all of this the coverage has been in terms of the *infantryman*. That is all very well when the idea is the improvement of the foot soldier and foot units at all levels. But taken out of the infantry vacuum, it is in line with the prevalent tendency to consider the Army always in an infantry context—the infantryman, the rifleman, the foot soldier—and this is only one part of a whole of many parts.

Soldier reaction in battle is a key subject in a consideration of the composition of our forces. Army organization, doctrine, techniques, tactics, equipment, all must keep pace with technological change. The evolution in methods of warfare affects the balance of our forces, and changes must come at all levels of the Army structure if we are to keep pace with the times.

Thus it is an interesting thing, and a necessary thing as well, to look at the whole by considering not only how the foot soldier reacts on the battlefield, but the *mounted* soldier as well. A thesis might well be posed in a series of questions.

What does the tank do for the tanker on the battlefield? Among mounted soldiers, are there as many individual failures to act as with the rifleman? Does the tank, with its ability to move, its protection and its armament, its sense of power and crew companionship, instill a proportionately higher degree of combativeness in the individual soldier? What is the relation of aggressive-mindedness between the mounted and dismounted soldier?

What difference, if any, can be expected between the orthodox foot infantryman and the armored infantryman? What is the difference in reaction between the artilleryman serving an emplaced gun and one serving a self-propelled gun?

The army that comes up with the answers to these provocative questions, and applies the findings correctly to its organizational composition, will be well on the way to success on the battlefield.

From the individual soldier standpoint, there is little doubt that *horizon* has much to do with battlefield reaction and effectiveness.

Variations in foreground and horizon have marked effect upon individual and crew performance. There appears to be a degree of rapport within the crew of a tank or plane which plays a more decisive part than in the team operating in the open—the foot team.

The foot soldier's horizon is limited. His objective is in the foreground. More often than not, it is a hill, a ridge, a mountain—something above him, something which, quite apart from the consideration of enemy opposition, will require physical effort to reach. The foot soldier's thinking is conditioned to the next bound.

On the other hand, the mounted soldier's view reaches well forward, to and beyond the visible horizon. Physically he is higher off the ground. His overall role of mobile operations, reconnaissance, exploitation, pursuit, connotes distance, movement, advance! The mounted soldier's "psychological reach" thus becomes more appreciable than that of his comrade on the ground.

Operations Research Office has been carrying forward fatigue and stress duties in Korea, studies once again limited to the foot soldier area. However, sampling of tanker reaction in Korea might well fall short of averaging out by virtue of the infantry complex of that war and the fact that

A Milestone

With this issue of *ARMOR*, the 65th year of publication of the Magazine of Mobile Warfare gets under way.

It was in March of 1888, three years following the organization of the United States Cavalry Association, first of the ground arms organizations, that the *Cavalry Journal* commenced publication, first by some years of the ground arms journals.

An interesting transition has taken place in the life of the publication, a transition superimposed upon the thread of continuity identified in the magazine's subtitle—Mobile Warfare. Three names have carried the mounted organ through changing times and the evolution of warfare. Mobility's exponents have flexible minds.

The *Cavalry Journal* banner spanned the period 1888 through 1946, when, against a backdrop of mechanization in the mounted field, the name be-

came *Armored Cavalry Journal*. This was to last four years, until 1950 and the passage of the Army Organization Act, which made *Armor* a continuation of the Cavalry. Thus *ARMOR*.

Twenty-six editors (see next page and page 4) have held the editorial chair over the three score and five years of publication. Home was Fort Leavenworth until 1920, when the headquarters was moved to the Nation's Capital.

Frequency has varied through the years, from monthly to bi-monthly to quarterly, with two periods of suspension, one at the turn of the century as a result of the Spanish-American War, the other at the close of World War I.

The history of the Magazine of Mobile Warfare is one of long service to the mounted arm, the Army and the country. Operating on a firm base, its capacity for service is dedicated to the future.

Armor is not employed in its true and correct role. It is unfortunate that across-the-board samplings were not completed for World War II Armor personnel, to support a general finding that our armored divisions had a higher level of performance as a whole than did our infantry divisions as a whole. The reasons for this, however, were not officially deciphered; it may not be amiss to think that several points expressed in these pages contribute to the answer.

Despite the paucity of attention to mounted soldier reaction in combat, the subject is not an entirely new one. For example, as far back as 1922, the eminent British military analyst, Major General J. F. C. Fuller, wrote: "In the next war we may expect tactical organization to proceed . . . at an enormous speed, if muscle be replaced by petrol. . . . Weapons will become more and more powerful, protection more and more mobile, mobility more and more speedy, and morale, safeguarded by these three, more and more firm." Confirmation of a higher performance level by armored divisions over infantry divisions in World War II would tend to confirm General Fuller's farsighted analysis for his "next war."

The firmness drawn by the mounted soldier from his "mount" may be just such a psychological lift as that experienced by the average citizen in getting behind the wheel of a car, or in mounting a horse for a ride along a favorite trail. Training and discipline translate that added something into a positive factor on behalf of the individual and the team. When we see that "in any given action in World War II, only 12 to 25 per cent of all combat soldiers who were armed and in a position to fire their weapons at the enemy were able to pull the trigger," and that this figure has been upped to barely 50% on today's battlefield in Korea, there appears to be justification for a careful search

for additional military methods to trim the negative percentage even further. The mounted area may be a lucrative source.

It is difficult to consider this subject without bringing in the atomic warfare angle.

In the most recent test at our Nevada proving ground, foot troops were dug in a bare two miles from the blast. There was even some conjecture to the effect that these troops might well have been able to weather the thing by lying flat on the ground. We know that it takes time to dig in; it takes time for foot troops to assemble; it takes time before foot troops can safely move into a radiation zone; and it takes them time to move in.

Armor's protection is already wrapped around the mounted soldier against the possibility of an enemy atomic blast. Mobility allows wider dispersion against blast effects and closer proximity to the blast. Rapid concentration is possible immediately following a blast, and mounted troops should be able to roll through a radiation zone sooner than dismounted troops—all of which seems to signify, in a tactical sense, the ability to carry the fight to the enemy with heavy fire power and win a decision despite atomic action. Conversely, the points outlined in this paragraph apply to friendly use of the atomic instrument. Insofar as soldier reaction under these circumstances is concerned, may we not say that the mounted soldier goes onto the atomic battlefield with definite advantages over the dismounted man?

Much of this consideration of the matter of soldier reaction in battle is yet to be corroborated by official study. That it is a worthwhile area for a study is obvious. And, although there is some speculation in these paragraphs, the idea appears to be substantially sound. At least, it may be sound enough to draw one definite conclusion . . .

"Mounted" means a difference.

A Transition

This issue, which marks the 65th year of publication of this magazine, serves also to mark the departure of its 26th editor (see previous page and page 4). And since this is a combination office, it marks the departure of the Secretary-Treasurer.

Assignment to this post is unique in the Army. Service during this tour just completed has been unique as well. For this has been the period of consolidation in the evolution from horse to horsepower. This has been the interval that brought the significant name change. Businesswise it has been the moment to combat the postwar ebb.

In the general affairs, we have seen a long pull from 1800 up to more than 5800 paid copies of the magazine coursing out through the world postal system. We have seen Association membership multiply in proportion. We have seen the ordered copies per issue jump from 3,000 to 7,500. We

have seen a doubling of staff, a doubling of operating space, a doubling of rent; we have seen two increases in subscription rates, a strengthening of the Executive Council and a real annual meeting.

Our thanks and appreciation go out to the members of the staff who have carried forward the administrative details during our incumbency—circulation, bookkeeping, book department, shipping and file—details which may not have the glamor of the editorial end, but which nevertheless contribute to the finished product.

We extend sincere thanks to the distinguished members of the governing body for their accessibility and their invaluable guidance and counsel.

We extend to Editor Number 27 our sincere good wishes in his new post, with a guarantee of wholehearted support and assurance of an interesting tour of duty.

A armor is an important cog in the machine of Western European defense. On these pages are pictured the commanding generals of six armored divisions contributing to the mobile defense of the West. The commanders of the U. S. 2d and French 5th, review armored division battlefield employment

Mobile Defense of Western Europe

by MAJOR GENERAL GEORGE W. READ, JR.

TWO important factors must be borne in mind when considering the defense of Western Europe. First, the Allied Powers will never attempt to match Soviet troop strength with equivalent forces, and second, the Allies will not touch off World War III by a covert act of aggression.

Since Soviet intentions are unknown, an attack on Western Europe is a stark and ever-present possibility. Thus, within their economic capabilities, the free nations must maintain strong forces on a stand-by basis. These forces cannot now prevent an aggressive move from the East but they are in a position to inflict severe punishment while reserves are speedily mobilized to cope with the attack.

It is a foregone conclusion that the

Soviets will enjoy the element of surprise in striking the first blow, and this advantage will force Allied troops to assume a defensive role initially.

Today the defensive capabilities of the Allies are a far cry from their potential in 1948. Then, when Soviet aims in Europe were so clearly unveiled, the role of our forces in Germany was swiftly changed from occupation to defense. Even though the equivalent of two divisions in the U. S. Zone and similar token forces in the British and French Zones were highly trained and resolute in their determination to fight and give a good account of themselves, it was obvious that they were no match for the overwhelming strength of the Red Armies poised to run roughshod over the European Continent.

The remarkable build-up of Allied Forces since 1948 has erased the Soviet capability; the golden opportunity for quick and easy Red Army victory has passed. The Soviets now know that the success of a westward attack is definitely a gamble.

Present Allied strength permits the positioning of troops so that the element of surprise can no longer be tactically effective. Our forces are constantly aware of the possibilities of a sneak attack and all units are alert and ready to take the field on a moment's notice.

If the Battle of Western Europe is ever joined, it must be recognized that Soviet forces will have initial air and ground superiority. The ground effort, with complete air cover and close air support, will be spearheaded by strong armored and mechanized formations thrusting to link up with sizeable air drops on critical terrain features. The weather will be propitious and the trafficability good. In our favor, we have intimate knowledge of the terrain, can elect to fight on ground of our own choosing, and can trade space for the time necessary to inflict the greatest possible losses. Our logistical support will be simple by comparison.

The problem, then, is how to conduct the initial defensive phase of this battle. If the Allies fall back quickly under the protection of light covering forces and attempt a sustained static and linear defense along likely terrain barriers, they are invit-

NATO ARMORED DIVISION COMMANDERS



Maj. Gen. George W. Read, Jr.
CG, 2d U.S. Armored Division



Brig. Gen. Robert Loth
CG, 5th French Armored Division



Maj. Gen. George E. Prior-Palmer
CG, 6th British Armored Division

ing attrition and an early breakthrough by powerful Soviet forces. The best solution is a highly mobile defense in considerable depth. In this type of warfare, mobility and maneuverability of the armored divisions and other armored formations can be

used to the greatest possible advantage in the vital and traditional role of keeping the battle fluid and destroying enemy armor.

The 2d Armored Division is prepared for such a role in support of the U. S. Seventh Army.

will have to proceed on their own over areas suitable to maximum firing effect and inter-tank support. It is at the higher echelon of armored command that tank-infantry cooperation will be effected.

Divisional artillery with short-range equipment can no longer support tanks in a rapid advance, except by frequent changes of position, which is harmful to firing continuity and effectiveness.

The engineers, with present equipment, are no longer in a position to insure the clearing of obstacles with sufficient speed for tank operations.

Logistical problems have been created with the use of the new Pattons; tonnages of fuel and ammunition for tank units have increased. Every effort, however, must be pointed to preventing the burdening of armored division units by logistical details. They must be left free to maintain their strategic mobility. Fully mobile supply units, capable of cross-country operation, should be ready to supply the armor at night from advanced depots pushed far forward by Army.

The striking power of an armored division will be utilized only insofar as its cooperation with other arms does not restrict its tactical mobility, and logistical requirements do not diminish its strategic mobility.

Our armored units must be allowed to accomplish their maximum performance through the basic principle that applies to the arm—mass employment.

For the Armored Division . . . New Battlefield Potential

by **BRIGADIER GENERAL ROBERT LOTH**

THE technical characteristics of new tanks have increased tank unit mobility and shock. With lighter ground pressure, better suspension system, better engines and increased maneuverability, the new Patton tanks can move at high speed over difficult terrain. The more powerful gun, better ammunition and improved turrets, with the latest in fire control systems, allow the tank unit today to effectively engage enemy tanks at greater range and over a wider area.

Division tank units are a formidable force on the battlefield when handled by well-trained personnel.

The increase in tactical potential

of the tank unit places new emphasis on the problem of cooperation of tanks with their supporting arms—infantry, artillery and engineers—whose equipment has not followed the same technical evolution as the tank.

The infantryman, mounted in a vehicle that is less operable over any type of terrain, and not so fast as the tank, can no longer maneuver at the speed of armor: armor loses the benefits of its speed when it is held to the pace of the slower elements of the tank-infantry team. The combining of tanks and infantry at small-unit levels, therefore, no longer seems to be practicable except in particular instances; more and more the tank units



Maj. Gen. Charles P. Jones
CG, 7th British Armored Division



Maj. Gen. H. R. B. Foote
CG, 11th British Armored Division



Maj. Gen. L. J. V. L. Gysels
CG, 16th Belgian Armored Division

Sum & Substance

A regular feature in *ARMOR*, where you may express your views in approximately 500 choice words—the effective medium between the letter and the article. This section is open to all on any subject within the bounds of propriety. Name and address must accompany all submissions. Name will be withheld upon request. No pseudonyms.

*Amphibious operations are almost inescapably a part of modern warfare. The smallest war today involves the three dimensions—land, sea and air. History records the effects of amphibious operations on the course of empire. What might have been the shape of things had the Spaniards or Napoleon or Hitler carried out their plans for the invasion of England? This type of operation had its widest use in the greatest world conflict—World War II—when, for example, the United States Army executed forty-nine successful combat amphibious actions in the Mediterranean, Atlantic and Southwest Pacific areas. As recently as the Korean campaign our forces executed a successful amphibious end run around an enemy flank—an operation that has great merit over a frontal assault against a strongly fortified line such as now exists across that battered Peninsula. Against this background, *ARMOR* turns to one of the U. S. Army's two armored amphibious battalions for an appraisal of special techniques. The battalion and company commanders of the 747th Amphibious Tank and Tractor Battalion, Fort Ord, Calif., speak out on a highly significant subject.—EDITOR.*

The writer of the following made the initial World War II landings at Guadalcanal with the Americal Division, later serving as tactics instructor at the Cavalry School and on the staff of U. S. Air Forces Mid Pacific. A former commander of the 43d Cavalry Reconnaissance Squadron and a graduate of the Armored School and the Marine Corps Amphibious School, he has been commander of the 747th Amphibious Tank and Tractor Battalion for the past nine months.

Since its call to duty from Reserve status in Florida, the 747th Amphibious Tank and Tractor Battalion has been successively stationed at Fort Worden, Washington, Camp Cooke, California, and its present location, Fort Ord, California. A general reserve unit, the battalion is the only one of its type in the States, and is one of only two in the United States Army, the other being the 56th, now serving in Japan.

Call of this battalion into active service was a peacetime economy and training measure, designed to provide a headquarters for the training of amphibious tank and tractor companies and individuals as a nucleus for expansion should a mobilization requirement arise.

Normally the tank companies (four per battalion), and the tractor companies (two per battalion) are organized as separate battalions. Thus two tractor battalions and one tank battalion are sufficient to support one

infantry division (with two assault RCTs) in an amphibious landing. These amphibious units are Army or Corps troops, attached according to operational requirements.

Our tracked equipment [LVT IV and V (A)] are the obsolete World War II vehicles, outgunned, slower, less maneuverable, less sturdy in land operations, and with less protection than the new C-3 and C-6 LVTs used by our Marine Corps units. Nevertheless, the general principles of employment remain the same, and with a little imagination, a recomputation for time and space factors, a lower availability of vehicles due to heavy maintenance requirements, and consideration of the fragility of the old veterans in land operations, the training mission can be accomplished.

In the following discussion, bear in mind that the considerations are based on units equipped with the new type vehicles and not the World War II equipment presently in use.

A review of the capabilities of atomic weapons in amphibious warfare indicates that our tactical choice is dispersion or obliteration. Against an enemy with atomic capabilities, the need for self-sufficient dispersed amphibious landings and rapid movement inland to key objectives in a joint effort to seize the assigned beachhead is apparent. What better unit for this mission than the Amphibs? Loaded with assault infantry troops, protected from atomic effects by dispersion and the covered hatches for minimum losses, these Amphib

units will provide transportation to the landing area, invasion of the beaches, mobility, shock and fire power while on land, and resupply from ship to inland areas with no transfer or delay for reloading, and no reorganization of troops or supplies. Floating dumps for critical items such as ammunition, fuel and water will be provided by preloaded LVTs without the exposure of ships and their cargoes to hostile fire; and last but not least, there is a rapid means of medical evacuation during the initial stages of the landings prior to establishment of medical facilities on shore. Thus you have in the Amphibs a water-borne and land operating fighting team that is the amphibious counterpart to the armored division's combat commands.

Aside from futuristic, atomic, or pushbutton warfare, reflect now upon the value of these units in river crossing operations. A successful river crossing requires deception of crossing sites to be used, rapid crossing, early build-up of "bridgehead," and rapid breakout to exploit the crossing. With Amphibs all of these desired factors can be met. The necessity of boating assembly areas is eliminated; the assault units move direct from assembly areas or assault positions and are committed to crossings still fresh; protection and fire power are provided during the crossings; the crossings are rapid; and surprise is achieved. The assault units take with them tank-infantry teams (Amphib tanks and tractors with infantry), ar-

tillery support (Amphib tanks) and supply and evacuation means without the need of bridges or transfer points from land vehicle to boats, or vice versa—another example of how these Amphibs can be used to form combined arms teams to operate on water and land alike for rapid crossing of a water obstacle and initial seizure of a “bridgehead” objective.

In addition to their amphibious role the Amphibs provide an excellent supplementary force for protection of airfields and rear area installations and for anti-airborne defense. In these units you have mobility (relatively the same as with the tank), fire power (five machine guns on each tractor) and adequate communications (comparable to land tank units)—a made-to-order mobile unit that may be supplemented with infantry and can relieve combat troops such as infantry and tanks for the main mission. To effect a feint or ruse to simulate the movement of armored units, the general organization, noise of movement, and radio net of these Amphibs provide a commander with an excellent organization to deceive the enemy without the loss of actual armored units to effect the ruse. These are just a few of the effective additional missions that may be assigned the Amphibs.

A discussion of Amphibs would be incomplete without a few thoughts given to the task of “staffing” one of these units through an amphibious operation. In order to completely coordinate an operation, directives from the landing troops’ commander and amphibious forces’ commander, each assault unit commander’s requirements, and shore party commanders’ desires, and certain logistic and communications requirements, must be digested and turned out as readable, simple instructions to your troops. Detail upon detail must be rehearsed until perfect. Complete operational and logistic planning and execution come only with actual combined rehearsal and maneuvers. This requires a stability in staff assignments with close teamwork between the S2, S3, Comm 0 and S4. They must be able to plan concurrently as a preliminary to effective execution.

To support this integrated planning with an effective communications system is a commander’s pet peeve and a communications officer’s

nightmare! Everyone wants to get in the act! The following are a few essential nets that must be manned: LVT Net, Tactical Command Net, Shore Party Net, Tank-Infantry Net, Artillery Net, Air-Ground Net, LST Net, Naval Gunfire Net. To maintain this system each and every radio operator must be disciplined and trained to a fine edge. Each tank and tractor commander must be trained in radio procedure, and familiar with all the nets and call signs in order to tie in with the unit he is supporting. Each individual vehicle has an “encyclopedia” of directories and call signs connecting it with all agencies in the landing force. Here radio discipline must be monitored closely, and only long hours of training will accomplish the desired result of

All Photos U.S. Army



Lt. Col. Pitts

“transmit only when it is an *absolute* necessity.”

This is only a brief discussion of the capabilities, use, and problems of an Amphib unit. This armored team, trained as tankers, endowed with the intuition of the oceanographer, skilled in the ways of the small boat sailor, and indoctrinated with the combat soldier’s will to win, will bear the brunt of the initial amphibious landing, breach the beaches, carry the assault troops to their assault positions, and push inland to support the troops to the objective.

True to the spirit of the Amphibs, regardless of mission or odds—“We Break Through.”

LT. COL. GEORGE T. PITTS, JR.

The writer of the following entered the Army in 1949 as a second lieutenant and immediately attended the Armored School. Upon graduation he was assigned to EUCOM and served in Constabulary Headquarters, later Seventh Army, as an Intelligence officer. He has commanded Headquarters and Service Company of the 747th Amphibious Tank and Tractor Battalion since June of 1952.

The Headquarters and Service Company of an Amphibious Tank and Tractor Battalion is organized similar to that of the Tractor Battalion under TO&E 17-126.

Being the service unit for the battalion our mission isn’t as glamorous as that of our sister line companies. However, that doesn’t mean that our job is not important. It is a most essential one. The measure of success enjoyed by the combat companies of the battalion will be in direct ratio to the efficiency with which the Headquarters Company carries out its administrative support role.

As a separate battalion we have our own personnel section, staffed by officers and men of Headquarters Company. As in all Headquarters Companies the battalion staff is an integral part of our company. The nature of amphibious operations is such that staff planning problems are much more complex than is usually the case in a strictly ground operation. To work out all of the minute details of a prospective amphibious operation takes weeks and sometimes months.

An amphibious operation of any magnitude will involve elements of at least the Army and Navy, and probably the Air Force. Staff coordination between services must be initiated and maintained. Liaison, mutual confidence, and good will are essential factors to be preserved.

An objective having been selected, the Intelligence Officer must consider not only whether the terrain is adaptable to land force operations, but whether naval forces can navigate with safety in the adjacent waters. Beach, tide, and weather factors must be evaluated.

Personnel of the Operations Section must work out detailed split-second time schedules for coordination of fire support of naval, air, and army weapons. These weapons range

from sixteen inch naval rifles through bombs, mines, and rockets, to machine gun and rifle fire. Movements of personnel must coincide with these fire schedules. Timing is vital and safety margins are small in order that full advantage may be made of surprise and shock.

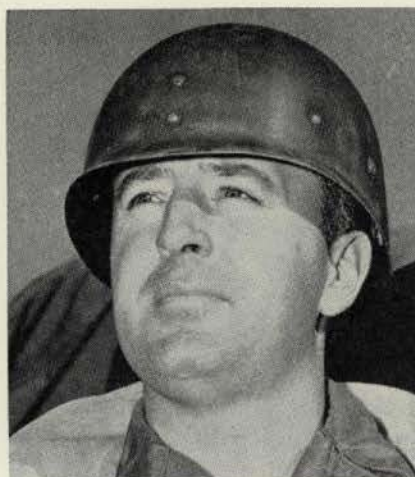
An enormous amount of a great variety of supplies is mandatory in combat. Exigencies of transportation and stowage necessitate curtailment, of course. It is the amphibious Supply Officer's problem to determine what items, including proportion, must be squeezed into the limited ship cargo space allotted. Then he must determine a manner of stowage that will insure quick and orderly unloading or transshipment at preset time schedules. It will be useless to have cases of blood plasma or ammunition if they are not accessible when the need for them arises.

It should be readily discernible that interstaff coordination is as vital a factor as the coordination between the staffs of the services involved.

In combat, the communication network is very complex. The Communication Section must plan and establish a great number and variety of both radio and wire nets. The tank companies must be tied in with the infantry, artillery, and tank units whose vanguard they are, and with the beach perimeter defense system. Meanwhile, the tractor companies must be netted with Navy forces afloat and Army-Navy shore party groups on the beach. Battalion Headquarters must be netted in with the tractor companies somewhere to the rear, and with the tank companies committed in support of the advancing infantry. In addition Battalion Headquarters must be provided with communication with the senior command of the land and water forces.

Vehicular maintenance, always a critical factor in a tank unit, is no less so in an Amphibious Armored Battalion. The corrosive action of the salt water adds to the normal repair burden borne by the battalion maintenance officer and his crew. In addition to the maintenance section in each company, there is a Battalion Maintenance Section of one officer and forty-one men in Headquarters Company to furnish major repair and maintenance support.

Like its land tank counterparts, the



Lt. Spirup

Headquarters and Service elements of an Amphibious Tank and Tractor Battalion must be mobile. In order that all staff sections may keep abreast with action on shore or in the offshore shipping lanes, Headquarters Company is provided with eleven LVTs for the transportation of their personnel and equipment from ship to shore and overland as necessitated by the situation.

Although operating in a different medium and employing different equipment the mission of Headquarters Company of the Amphibious Battalion is similar in principle to that of its land battalion counterpart. That is to provide the housekeeping and logistical support as needed to enable Battalion Headquarters and the line companies to successfully carry out their missions.

1ST. LT. JONES G. SPIRUP



Capt. Hunt

The writer of the following entered military service in 1937. During World War II he served with the 2nd and 3rd Engineer Boat & Shore Regiments participating in landings at New Guinea, the Southern Philippines and Luzon. Upon return to active duty in December 1948 he was assigned to the 5th Cavalry Regiment and the Amphibious Training Center in the Far East, participating in small boat operations in Korea. He assumed command of Company A, 747th Amphibious Tank and Tractor Battalion, in January 1952.

In an amphibious operation against a hostile beach, primary consideration, after determining the size and composition of the landing force, must be given to supporting arms during the initial stage of the landing. Armor is a definite asset to a landing force and a requirement to insure the success of the operation especially if the beach area is contested. On many beaches land tanks cannot be provided with the landing force because of the limitations imposed on transportation facilities by the characteristics of the beach, beach approaches and enemy defenses. When such is the case the one available supporting arm which can overcome the obstacles of transportation and still provide many of the supporting roles of the land tank is the Amphibious Tank Company.

The preparations for the use of amphibious tanks in support of a landing force are long and involved. All possible data on hydrographic conditions must be made available. To assist in the identification of the beach zone an oblique photograph of the beach should be provided. The importance of the oblique photograph should not be minimized. Moving along a medium as obscure as water, where there are no stable identifying landmarks or tracks to guide on, a preview of the beach facilitates control and direction. It must be remembered that the amphibious tanker is the first ashore and if he lands on the wrong beach the whole operation may be affected.

During the approach phase of the landing the amphibious tank company, preceding the landing force into the beach, is charged with the responsibility of delivering covering-

fire along the landing zone and neutralizing beach defenses which were not destroyed by the pre-landing naval bombardment. To facilitate the accomplishment of these tasks a gyro-stabilized mount is provided for the 75mm howitzer which is the main gun of the amphibious tank.

The method of deployment along the beach is often determined by the character of the beach itself and the particular defense employed by the enemy. Sandy beaches normally have an acute rise immediately following the surf line. With this type of beach it is more advantageous to stop at the water's edge to utilize the defilade afforded by the sand. Since the hull of the LVT(A) has only ¼ inch armor protection every means available must be taken to cover the vehicle from heavy machine-gun fire and high-explosive missiles. From this defiladed position the automatic weapons and the main gun of the amphibious tank can be employed to destroy or neutralize enemy defenses in the immediate vicinity of the beach while the infantry is landing and reorganizing.

When the infantry assault waves have landed and reorganized the move inland from the water's edge is made as a tank-infantry team.

Control in an amphibious tank unit during a landing goes through three phases: (1) Strict, (2) Relaxed to nil, (3) Partial. The movement from the carriers, i.e., LSTs or LSDs, to the line of departure and then to the surf zone requires strict control. This movement must conform to a definite time schedule and a definite formation must be adhered to in order to insure a maximum effect in fire distribution along the beach. Immediately upon entering the surf zone control of the unit is relaxed. Each tank commander must overcome the action of the surf in the vicinity of his own tank and he must solve the problems imposed by the beach or obstacles in his own area. While in the surf zone the LVT cannot deliver effective fire on the beach because the vehicle is twisting and turning according to the wave action around it; therefore passage through the surf must be made in the fastest possible time. Inland from the beach control becomes partial. Here the tank unit commander finds that the assault units are fighting in all direc-

tions and the amphibious tanks are attempting to lend some support to each and every unit.

The peculiarities of the amphibious tank unit in actual operation demand that the training of the unit stress team play in addition to individual training. Each individual of an amphibious tank unit must be trained to accomplish any and all of the missions of the unit and must be flexible in thought and action.

CAPTAIN ALLEN D. HUNT

♦ ♦ ♦

The writer of the following served in the Pacific during World War II with the 715th Amphibious Tractor Battalion. Prior to his present assignment he served in Korea with the G2 Section of the 24th Infantry Division and later with the G3 Section of Eighth Army Headquarters. In July 1951 he joined the 747th Amphibious Tank and Tractor Battalion, assuming command of B Company.

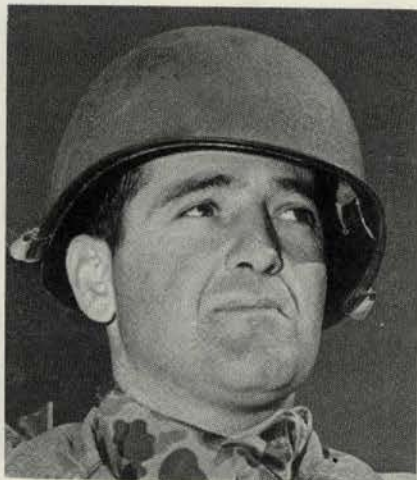
An Amphibious tanker is a peculiar individual. His work requirements include the ability to perform many of the duties of the Tanker, Artilleryman, Infantryman, Engineer Shore Party and the Navy Small Boat Operator. His survival requires that, in addition to his regular training, he develop the skills of the hobo, the surf-fisherman and the beachcomber. Finally, and most important of all, he must become very intimate with that most fickle of all sirens, the surf. He is capable of speaking to the Navy on equal terms and he can talk shop

with all other branches of the Army and Marine Corps.

Once committed his missions are many and varied. He may one day be operating as the flank guard of a division beachhead and the next be on an amphibious end-run around the enemy's flank. He may operate as a tanker in an assault on an enemy position, then suddenly revert to the control of the Artillery with the mission of providing additional artillery support for a friendly advance. He may find himself being used by the Shore Party to assist in the recovery of a broached landing craft or he may be part of a dismounted demolition patrol, operating close on the heels of the advancing infantry, with the mission of closing by-passed caves and bunkers. He may be carrying supplies to troops located in areas inaccessible to other vehicles because of swamps, unbridged rivers and rough terrain or he may find himself evacuating fresh casualties from a heavily contested beach out to Naval hospital ships. It is not unusual during an amphibious operation for him to hear the same phrase repeated over and over again, "Get a few Amphibs to do the job."

His training, if properly conducted, qualifies him for all of the jobs he may be called upon to perform; and his vehicle, if properly maintained and handled, is just the device needed to insure success.

Yet, despite his potentialities, there are definite limitations to his capabilities. Although he can perform the missions of the tanker, artilleryman and infantryman, each mission must be granted with some reservation. As a tanker he is definitely limited by his lack of adequate armor. With only 1 inch of armor-protection around the turret and ¼ inch on the hull heavy-caliber machine guns and small mortars can neutralize him. In view of the lightness of his armor he can better perform the mission of the assault gun or SP gun. (This is not so with the new amphibious vehicle.) As an artilleryman he is limited by the small size of his main gun which is a 75mm howitzer. In addition to a heavy-grousered track which cuts a deep furrow and is difficult to camouflage, he also has a 10 foot high silhouette which is difficult to conceal. (The new amphibious vehicle has a 105 how, and the same track as the



Capt. Vitullo

land tank with paddles on the inner surface.) As an infantryman he is limited by the lack of adequate infantry-type individual weapons. His small arms consist of pistols, M3 sub-machine guns and some carbines.

When operating in water his vehicle loses maneuverability when required to move at slow speeds. In addition he has no braking-power when maneuvering in water. When operating on land his vehicle has exceptionally rough riding characteristics which considerably cut down his speed. The ground contact area of his track is so small it results in a ride similar to that of a hobbyhorse. Yet in spite of these limitations his vehicle can still negotiate obstacles both on land and water which would normally stop any other vehicle presently in use.

The one great factor that the amphibious tanker adds to other units assigned to an amphibious operation is that he acts as a morale booster. Some confusion exists on a hostile beach when the infantry landing force comes ashore. Landing from different boats they must reorganize to form the efficient fighting team they must be to successfully take and

hold the beachhead. When this landing takes place in the face of the enemy defenders many casualties occur and the confusion of reorganization is increased. But when the landing force is preceded by amphibious tankers, the infantry have an opportunity to reorganize behind a wall of friendly armor. Since the amphibious tanks are forward of the landing force laying down a heavy screen of automatic and high-explosive fire the few remaining beach defenders have little opportunity to disrupt the efficient reorganization of the infantry.

The amphibious tanker is proud of the role he is capable of playing in an operation. When properly trained and employed, but with due consideration given to his vehicular limitations, he knows he can contribute much to the success of any amphibious operation.

CAPTAIN ORLANDO E. VITULLO

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The writer of the following served in the Pacific with the 32nd and 41st Infantry Divisions and in the ETO

with the Assembly Area Command during World War II. Prior to his present assignment he served in Korea with the Tank Company, 31st Infantry Regiment. He joined the 747th Amphibious Tank and Tractor Battalion and assumed command of C Company in April 1952.

Ballast your tractor . . . boat paddles . . . bilge pump . . . inner transport area . . . wave guide boats . . . time interval between breakers—these are only a few of the strange and unfamiliar terms a land tanker will encounter upon joining an Amphibious Tank and Tractor Battalion.

The tractor companies of such a battalion can be compared to truck companies which have been given a combat mission in addition to normal duties. Landing troops and supplies in the face of enemy fire on a hostile shore is one of the many missions of a tractor company. This involves continuous and rapid movement from the inner transport area of assault troops and supplies through the surf zone and onto the beach.

When the landing has been accomplished the tractor company will, if hydrographic conditions indicate,



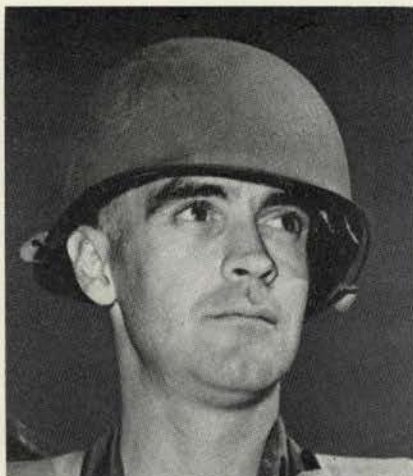
This recent photo shows the 56th Amphibious Tank and Tractor Battalion unloading LVTs and LVT (A) (5)s from an LSD Floating Drydock out in Sagami Bay, Japan. Purpose was to study water action while rehearsing loading methods.

participate in a transfer line operation. In this type operation, the tractors will return from the beach to the transfer line and load troops transported there by the propeller-driven landing craft. Normally a transfer line operation is indicated if there is an offshore reef or sandbar which will prove to be an obstacle to the small boats used in transporting the later waves ashore.

At the completion of the transfer line operation the control of the tractor company passes from the battalion headquarters to the shore party commander. Another mission comes into view, as the tractors are then used in the resupply phase to haul cargo. However, holding and defending the captured beach area lies in the zone of responsibility of the tractor company.

In the early stages of the beachhead defense phase the tractor company is normally alone since the amphibious tank companies are engaged in their role of supporting artillery for the infantry. Upon completion of their artillery role the tank companies will rejoin the tractor companies and both will return to battalion control.

Let us now look at the vehicles the



Capt. Kunz

tractor company uses to accomplish its mission. The company, full strength, is authorized 51 LVT MK IV's or at reduced strength 20 LVT MK IV's. This vehicle is full tracked and will carry cargo or troops on land or water. A crew of 3 mans the vehicle and its normal armament is three .30 caliber and two .50 caliber machine guns. The tractor has no basic armor; however, portable armor is available and may be attached if required for an

operation. This armor, if used, will reduce considerably the cargo weight capacity of the tractor.

Since this is an amphibious vehicle and is so balanced that with a full load it will ride level in the water some consideration had to be given to its seaworthiness without cargo. This has been alleviated by the installation of a ballast system. By flooding the ballast tank, it is possible to take on approximately 4000 pounds of water, which helps considerably in the handling of an empty vehicle while afloat. This ballast system is so constructed that if the vehicle is to be loaded with cargo in the water the ballast can be released into the bilge and pumped out of the tractor by the bilge pump. Thus a tractor commander can take on or pump out ballast in the water.

The inherent eccentricities of this vehicle make the training of drivers and tractor commanders more difficult than is the case with land tanks. To develop an amphibious vehicle it is necessary to sacrifice some of the characteristics of a land tank and at the same time lose the ease of handling found in a small boat. Large S-shaped grousers are used on the



Units of the 747th Amphibious Tank and Tractor Battalion, whose commanders' contributions appear on these pages, are in a simulated water-borne assault along our West Coast in this photo which shows the tanks firing on their shore targets.

track and have the dual function of furnishing traction on land and propelling the tractor in the water. It may be noted that these grousers cause a terrific maintenance problem both for roadways and for the vehicle.

The tractor traveling in 4th gear in the water will travel 5 to 7 miles per hour forward. In reverse the tractor will move about one-half-mile per hour. Therefore it is almost impossible to halt the forward motion of the vehicle in the water by any means other than letting nature take its course.

In the water as on land the course of the vehicle is altered by pulling on the appropriate lateral. However, while water-borne we are confronted with a problem; that is, only wide sweeping turns can be made. Drivers and commanders must anticipate turns far in advance in order to keep from overshooting the mark. The weight distribution of cargo or troops will also affect the steering; therefore it is often necessary to shift cargo or troops to be able to control the LVT in the water.

The maintenance of the LVT is a never-ending problem. The vehicle was designed and manufactured to have a short life. In pulling the scheduled checks nothing can be left to chance. If there is a remote possibility that some part may rust, you may rest assured it is rusty. However, with much attention to maintenance, proper training and supervision of crews the the LVT will certainly do the job it was designed to do.

CAPTAIN K. STUART KUNZ

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The writer of the following served in the ETO during World War II with the 20th Armored Division. He returned to active duty in 1949 and served in Japan with the 32nd Infantry Regiment. In 1952 he joined the 747th Amphibious Tank and Tractor Battalion, assuming command of D Company.

Although the primary mission of the amphibious tractor company is to transport troops ashore during the assault, its role is diversified. Many duties are performed both afloat and

ashore. It is obvious, therefore, that the tractor crews must be adept in the various operations of these versatile vehicles. However, trained personnel are rare among those newly assigned to an amphibious tractor company due to the limited background of amphibious operations. The current doctrine is based on World War II.

D Company of the 747th Amphibious Tank and Tractor Battalion was confronted with the inadequacy of such trained personnel upon the release of reservists in the latter part of 1951. The replacements, primarily infantry, were for the most part unfamiliar with land tanks. Water-borne operations were completely for-



Capt. Piersol

eign to them. This necessitated a stringent training schedule, progressing from the basic to the ultimate goal—an amphibious operation in conjunction with the Navy.

As surf conditions in the early part of 1952 precluded water training, the initial training was restricted to classes and land driving essential to inland operations. Although the tractor company is restricted in extensive land use, it is also recognized that the fire power and mobility may be utilized effectively in defense of shore installations or as secondary lines between the front lines and the rear installations. Exercises were conducted in such defenses, stressing the potentialities as well as the limitations. Emphasis was placed on the self-sufficiency of the tractormen by dis-

mounting the tractor's two .30 caliber and two .50 caliber machine guns with the crew setting up defensive positions. The use of the mobile counterattacking force, and the repelling of counter-landings were also stressed. Vehicle versatility, such as utilizing tractors as prime movers or substituting for trucks in the movement of supplies and troops, became common usage to the crews.

By the time surf conditions permitted water training, the crews were no longer infantrymen, but tankmen. Being water-borne, however, was a departure entailing the development of new skills and techniques. Initially the tractors entered the surf individually, the crews deciding by trial the best approach. One method was moving the tractor as close as possible to the breaking point of the incoming wave, then moving rapidly into the spent breaker and getting out to sea before the following wave could break. A second method was to remain on the beach until the wave broke, then moving rapidly to build momentum, entering the surf before the following wave broke. The first method became more popular as the baptisms were less frequent.

As the proficiency of the crews progressed formation driving and landings were stressed. The tractor's design for land operation limits its maneuverability in water, thus formations are difficult to maintain. Formations, however, are essential to the successful transporting of troops ashore during the assault. The column is used after the troop-loaded tractors depart the LST for the rendezvous area where they are organized into waves. The waves are guided to the line of departure where they are dispatched in line at a prearranged time. They continue on to the beach so as to arrive on schedule. Formations provide control, and control is essential in fulfilling the dictates of the schedule and accomplishment of the mission.

In the fall of 1952 the "Phib Test" maneuvers with the Navy provided a fitting climax to the training of the personnel. But again the depletion of personnel has reduced "Dog" Company to a status nil. However, we're looking forward to our new replacements be they Armor, Infantry, or Artillery. C'mon in, the water's fine!

CAPTAIN WILBER S. PIERSOL

65 Years Ago

I desire to invite the attention of the Association for a few moments this evening to some remarks upon the use of the carbine and pistol on horseback; to discuss the question whether such use is advisable at all, and if so, to what extent and how far it should take the place of the saber and lance.

The U. S. Cavalry is at present armed with the saber, carbine and pistol—the two latter breech-loading fire arms, the ammunition contained in metallic cartridge cases.

It is to be taken for granted that we are to use all these arms in some way or other, and it would seem that definite rules for their use should be laid down by the proper authority.

The fact that widely different opinions as to the proper use of each arm, and in some cases as to whether the arms are useful at all prevail, makes the subject a difficult one. The rapid improvement in fire arms since the introduction of rifled weapons, which is still going on, seemed at one time likely to lessen greatly the value of the cavalry arm. The wars of the last quarter of a century have dissipated that theory, but have led to a great deal of discussion as to its proper use. As regards the great value of its work as a screening and reconnoitering force there is no question. As to its value as a dragoon force, opinion in this country has been favorable, but has not yet obtained very general acceptance in Europe. As to whether it can hereafter appear in heavy masses and by charging in line or column affect the fate of battles, is still a matter of doubt, to be determined only by future wars.

Modern cavalry may be loosely divided into heavy and light cavalry; the former armed with pistol and saber and, in some cases, with the lance, the latter, with pistol, saber and a carbine. In most of the continental armies the carbine has been added to the equipment of the heavy cavalry, so that the two bodies are practically armed alike; the principal difference being in the weight of the men and horses. This is notably the case in the army of Russia, where within a few years, all the lancer regiments, except a few in the Imperial Guard, have been converted into dragoons.

Mounted Fire Action of Cavalry

MAJ. G. B. SANFORD

50 Years Ago

As for the battle or fighting tactics, it appears plain that any one who has made a study of the campaigns with the new armament during the past five years must be convinced that the days of shock action and close order formation on the battlefield, are practically over for cavalry, as they are for infantry, and that its principal reliance is now on fire action dismounted. Instead of offensive mounted shock action, it has for the basis of its efficiency in battle, dismounted fire action, and the horse, instead of being regarded as a fighting weapon, becomes the means of rapid transportation from one important strategic or tactical point to another, enabling the soldier to quickly seize and hold vantage points. . . .

Modern tactics for cavalry as well as for infantry are drifting towards a greater dispersion of the men, greater responsibility of subordinates, and especially in training the individual man to be the fighting unit. Tactics must be changed with armament. Certainly the tactics designed for a single loading gun with black powder are not adapted for the present more accurate magazine weapon with smokeless powder and longer range, and it was perfectly logical that cavalry should abandon the old formations laid down in the drill book, when

in contact with the enemy, and adapt itself to the tactical conditions imposed by the new armament. The range of the modern rifle is now so great, and the dangerous fire-swept zone so extended, as to almost preclude the use of cavalry in the close formations heretofore used.

Mounted Rifles

COL. J. A. AUGUR

25 Years Ago

Fire power and mobility, the two most important assets of cavalry, are of their very nature conflicting. This conflict—which is ever present in varying degrees, whether in organization, armament, equipment, or even in training—demands our constant consideration in order that we may achieve that nice balance between the two which is so essential to our war time effectiveness.

In the matter of training we are likely to overlook this desired happy medium between mobility and fire power. This oversight is due, no doubt, partly to the multiplicity of cavalry activities, partly to the inroads upon our time and personnel from the perpetual call for post special duty and fatigue details, and partly, too, to our own natural inclinations that allure us towards those activities in which the horse predominates and thus excuse our negligence toward those equally important duties relative to fire power. It is not surprising, then, if cavalymen lean rather heavily towards mounted training and often do just enough of the other kind to get by. This, if carried far, develops faddists, of which we have our share.

If we would train our cavalry in accordance with our doctrine as to its tactical employment, we must carry out the conception that both mobility and fire power are necessary, that one is the complement of the other. To develop fire power cavalry is armed with the rifle, machine rifle, and machine gun. To these an anti-tank gun will soon be added, as well as the weapons to be adopted for the armored car troop and the tank platoon of the cavalry division. Only the first three weapons will be touched upon here.

Fire Power

COL. AUBREY LIPPINCOTT

10 Years Ago

The fate of every offensive is decided on the flanks. From the beginning to the end of an operation, the enemy's attention is riveted on the flanks of the advancing party. It is there that he seeks decisions and directs his retaliatory blows.

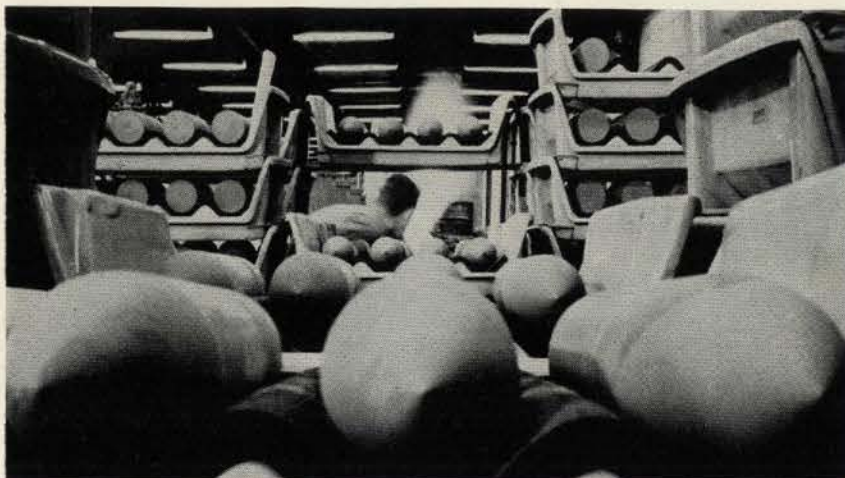
By counterattacks on the flanks, the enemy seeks to restore his lost positions, to cover up a break-through, to smash the battle order of the advancing party, and to cut off the advanced units from the reserves.

Continuous action against the flanks of a break-through is a typical method of flexible defense. The present war has produced quite a few examples of offensive operations which, though carefully prepared and successfully launched, have been total failures simply because of an unexpected counter-maneuver against the flank.

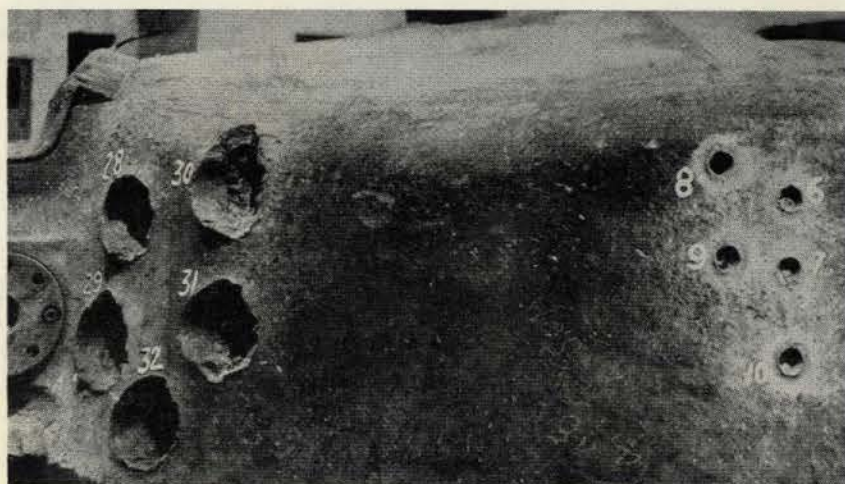
During one of the German attempts to pierce Soviet defenses in the area southwest of Stalingrad, a rather strong tank group, accompanied by a large infantry force, drove a deep wedge into the Soviet lines. But they were cut off, and the Nazi attack failed under sudden Soviet counterblows from both flanks.

Guard Well Your Flanks!

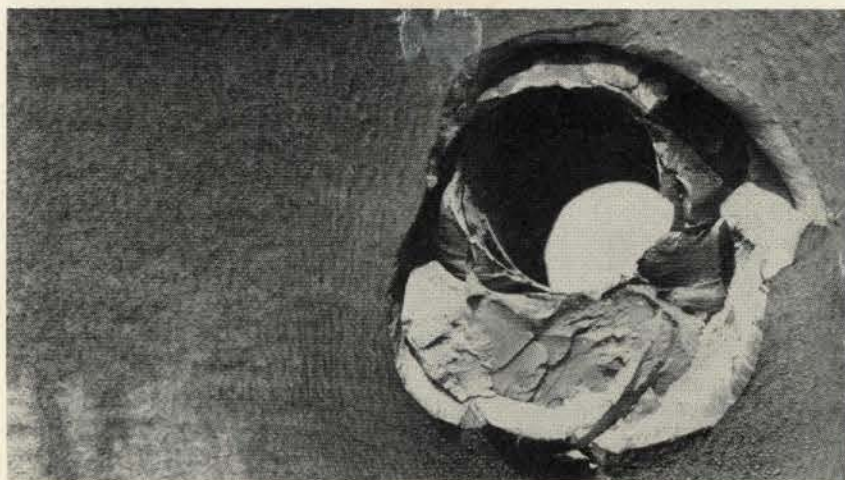
MAJ. GEN. TAGARTKILADZE
Red Army



Tungsten carbide cores for anti-tank shells stacked prior to the final heat treatment at the Carboloy Department of General Electric's Detroit plant.



The armor-piercing capabilities of tungsten carbide cores are shown in this view of a tank turret with penetrations on various slopes of the surface.



A tungsten carbide core has pierced this armor plate. These anti-tank shells were developed during World War II to stop the powerful German Tiger tanks.

THE CORE OF THE MATTER

A hitherto classified story of how an urgent "top secret" request from General Eisenhower led to the almost immediate delivery of a revolutionary new anti-tank shell that stopped the German Tiger tanks at St. Lo and is now in use in Korea has just recently been revealed.

Brigadier General Paul M. Seleen, Commanding General of the Detroit Ordnance District, disclosed the story behind a communique the Ordnance had received in 1944 from the Allied commander which said tersely that on "D plus 30" the Allied spearhead was being seriously slowed by new Nazi tanks with incredibly thick and impenetrable armor shielding.

The Supreme Commander pointed out that an anti-tank shell which could penetrate this armor would prevent the slowing down or even stopping of the Allied invasion.

Army Ordnance had been developing a new shell, but no such shell was ready for use on Friday, July 7, 1944.

The Detroit Ordnance District had worked closely with the Carboloy Department of General Electric Company in turning out tremendous quantities of cutting tools of the hardest metal made by man—tungsten carbide. This comparatively new metal was making it possible to manufacture war matériel in a fraction of the time it would have otherwise required.

The Army was aware of the fact that the Carboloy Department had provided tungsten carbide for its development work. However, they knew that these initial trials were far from completion. Would it be possible, the Army asked, to get some shell cores made immediately?

Within two days the Carboloy Department produced ten cores for test firing at Aberdeen Proving Grounds, and was making an estimate of how, where, and with what quantity production could be started if the tests proved successful.

In normal times, delivery of ten new shells such as these would have taken months or even years. And these were not "rough" models. The shell cores had to be held to comparatively close tolerances and, in general, the finished shell had to be similar to existing 76mm rounds if they were to be used in guns then at the front.

At 9 o'clock on Monday morning, July 10, the first ten were shipped by a special Army plane to the testing grounds in Maryland. Two days later, on Wednesday, the twelfth, the second batch was on its way. On Thursday, Aberdeen sent the news: "The answer to the German Tiger had been found—firing at even a 20 degree angle, these cores would penetrate the thickest armor."

In less than two weeks, production was under way. As fast as the shells were assembled, they were loaded on cargo planes and sped straight to the front—there were no time-consuming "channels" of transportation for these shells. They went direct. And it wasn't long after they were unloaded from the planes in France that they were being "loaded" again—this time by our anti-tankers who were aiming them at the enemy.

Today, these same type shells are being used on the Korean front.

Photos by General Electric & U. S. Army



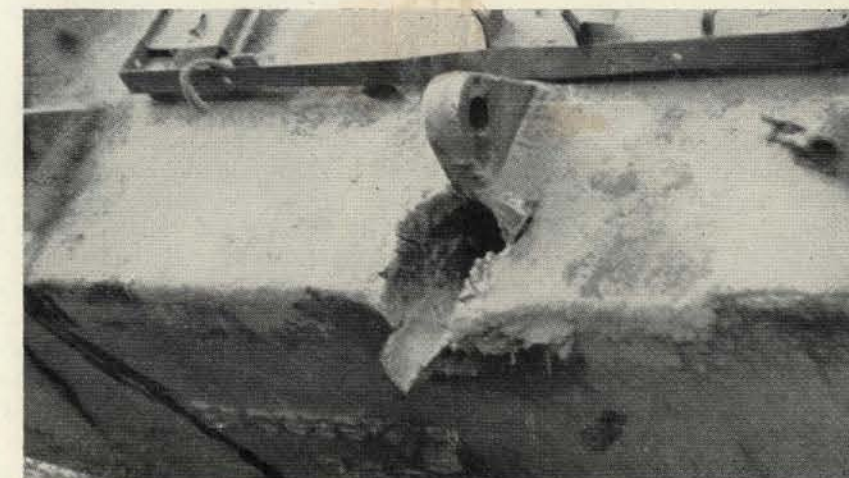
Where those two items, "penetration" and "first round hit," mean something—a tanker in Korea loads a round into the powerful 90mm cannon of a Patton M46.



This view shows the relation of the tungsten carbide core to the anti-tank shell. Left to right, the windshield, nose piece, core and body, less bands.



Here is some of the result on the payoff end. Photo shows a penetration on a Russian T34/85 tank by U. S. tankers in an action on the Korean battlefield.



These things work both ways. This U. S. M4 tank was knocked out by Red anti-tank fire in Korea. This is where the first round hit means the difference.

WARFARE AND THE FUTURE

by MAJOR GENERAL J. F. C. FULLER

THERE have been only two great revolutions which have radically changed the organization of armies. The first followed the adoption of the horse as a military animal, and the second the introduction of the internal combustion engine as a military machine.

Before the advent of the horse, city and village militias were organized in phalangial order—that is, into an articulated line of men six or more ranks deep, and as fighting consisted in push of pikes, victory depended upon choice of ground and endurance. Because the strength of a phalanx lay in its men maintaining a wall-like front, actions were purely frontal; manoeuvring was virtually impossible and so was pursuit. Even more important, because supply depended upon portage, it was exceedingly difficult to maintain an army for any length of time in the field; therefore rapid wars of conquest, as known in later ages, were impracticable, and in consequence wars were little more than raids restricted to clashes between neighbouring city states.

The introduction of the horse, in about 2000 B.C., not only completely revolutionized this primitive warfare but also the character of war

itself. First, it radically changed the supply system of armies, for the horse can carry or haul far more than a man, and what is even more important, unlike man, it can normally live off the country. The first great change was, therefore, the extension of the range of action of armies. Secondly, by using the chariot as a means of human conveyance it enabled troops to be brought in a state of freshness on to the battlefield and massed at tactically advantageous points. Thirdly, when the horse was used to mount the soldier upon—which took place long after chariots were introduced—an arm was created which could operate either independently of or in co-operation with infantry and which eventually evolved into two main types, heavy cavalry for shock action and light for reconnaissance and pursuit.

Though these developments covered many centuries, they finally led to a radical change in organization. The old infantry army of pre-horse days, geared to human muscular power both for fighting and supply, was replaced by an army geared to the muscular power of the horse. Not only was range of action increased, but the introduction of cavalry led to the birth of tactics—ability to reconnoitre, charge, manoeuvre, reinforce, and pursue. Arising out of this emerged a new factor, power to surprise, and therefore attack of an enemy morally as well as physically. In all this the point to note is that the adoption of the horse led to the

development of a totally different army—a horse-powered in place of a man-powered organization.

With the introduction of the internal combustion engine, which could supplement or replace horsepower by mechanical power of a vastly higher ratio, the same evolution was to be expected. And had this been grasped at the opening of the present century, when the motor car was in its infancy and the aeroplane was born, a hypothetical chart could have been drawn showing—very imperfectly though it would have been—the probable influences of the internal combustion engine on military organization. From it could have been learnt what changes were likely to be needed in order to enhance the power of armies; what could be done, and—as important—what could not be done as things actually were, and lastly what steps should be taken in order to render them possible.

Though no such chart was made, and the changes which so vast an increase of motive power would effect were left to circumstances to dictate, changes nevertheless closely followed those which had arisen after the horse was adopted. The first was the rapid replacement of the draught-horse by the lorry, not only in order to supply troops in the field, but also to meet the ever-increasing demands for artillery ammunition. In fact, the great artillery battles of World War I would have been impossible without mechanical transport. The second was the use of the lorry for troop move-

*Reprinted from *Brassey's Annual*, 1952, with the kind permission of William Clowes & Sons, Ltd., and the Editor.

MAJOR GENERAL J. F. C. FULLER, retired, eminent British military analyst, is the author of many books and articles on the world military picture.

*Though the roots of future warfare are hidden in the past,
the plant of war must be cultivated creatively.*

No stereotyped copying is likely to succeed.

Victory is to be sought in the imagination.

ments, which became increasingly frequent during the above war, and normal in the next. The third was the introduction of the tank, armoured mechanical cavalry, of which two main types were designed, a heavy tank for assault and a light for reconnaissance and pursuit. And the fourth, an enormous increase in opportunity and ability to effect surprise.

Here we have the main ingredients of what may be called a "motorized army"—that is, an army organized round the internal combustion engine. In greater part, such an organization was visualized within two months of tanks first taking the field. In the memorandum entitled, "A Tank Army," Major (now Lieut.-General Sir Giffard) Martel opened his study by stating: "Unless this war ends in a disarmament and a temporary universal peace, there can be little doubt that the present unarmoured and unprotected soldier will cease to exist and a tank army will take his place. A present-day army could never fight an army consisting of, say, 2,000 tanks."

Two years later, when the war ended, such an army was almost in being. Not only was the Allied plan of operation for 1919 based on tanks supplied by cross-country tractors, but the following tracked vehicles were either in existence or were being built: self-propelled guns, supply tanks, salvage tanks, armoured infantry carriers, mine exploding tanks, bridging tanks, engineering and sig-

nal tanks: in fact, the main ingredients of a fully motorized army. So convinced was I myself that the internal combustion engine would revolutionize military organization that, in 1922, I wrote: "In the next great war we may expect tactical organization to proceed . . . at enormous speed, if muscle be replaced by petrol . . . weapons will become more and more powerful, protection more and more mobile, mobility more and more speedy, and morale, safeguarded by these three, more and more firm. What does this mean? It means that no army will organize for a twenty-round contest, but instead . . . in such a manner that it can deliver . . . a knock-out blow as soon as possible after the first round opens. An army inferior to its opponent in numbers but superior in mobility will stand every chance of knocking out its adversary before he can even step into the arena."

Years later, in 1936, when again considering this subject, I wrote ". . . even under existing circumstances, it is possible for mechanized arms to overrun a country such as France, Germany, or Poland in a fortnight."

Although in the last war this prediction was dramatically fulfilled, during it a fully motorized army was never created, armies remaining largely in their chariot stage. Even so elementary a question as whether there should be one or two types of tanks was still being debated when the war ended. This was due to confused thinking, arising out of the

inability of the soldiers to realize that an army should be organized around the prime motive power of its day.

Let me here recapitulate in slightly different form. A man is not a weapon, he is a one-tenth horse-power creature who can carry weapons or a load, and as long as he is the sole means of carrying weapons or loads, he is the prime mover. Similarly with the horse, it is not a weapon, it is an animal approximately ten times as powerful as man. It can carry a man and his weapons and haul a weapon or a cart. As long as a more powerful motive force does not exist, the horse remains the prime mover. Lastly, as regards the tank, it is not a weapon—nor incidentally is an aeroplane. It is an armoured, self-propelled cross-country vehicle many times more powerful and less vulnerable than the horse. As long as it maintains its supremacy it cannot be other than the prime mover.

Had the soldier before the last war looked upon an army as a complex machine instead of as a bagful of war tools, he would not only have built tanks but also bullet-proof cross-country supply vehicles. He would not have decided to haul his guns with tractors, but would have mounted them on bullet-proof machines, and he would have moved his infantry in bullet-proof carriers instead of in lorries. In short, he would have built his army around the petrol engine, armour, and the caterpillar track, as armies of old were built around the horse, body armour,

and the wheel. True, in the last war many of these changes did materialize, but only through force of circumstances and not in accord with an organized pattern—a blueprint of a fully motorized army.

Now it is not my intention in this study to elaborate such a point, for the simple reason that I do not possess the requisite technical and administrative knowledge to do so. Instead, it is to examine certain tank problems which, in my opinion, have an important bearing on future warfare, and which may possibly assist the would-be army designer in devising a fully motorized army.

The problems I have in mind stem logically from those which arose after the horse first became a military animal, and though I will omit increased radius of action, which is now so apparent that to examine it would be platitudinous, I will consider the remaining four: surprise, supply, co-ordination, and independent action. After which I will examine three special problems—war with Russia, night operations, and the influence of atomic weapons on armoured mobility.

Surprise.—How to effect surprise is the basic problem in tank warfare, and one which in peace time is apt to be overlooked, and therefore in war time to become doubly conspicuous.

After the battle of the Somme in 1916, when tanks first took the field, we were told that it was a mistake to have used them because there were not sufficient to warrant success and their surprise effect was consequently lost. After the battle of Cambrai the following year, in which tanks played a decisive part, we were told that a similar surprise could never again be repeated. Of course surprise was not lost and of course it could be repeated, and could not fail to be as long as tank armour rendered rifle and machine-gun fire ineffective. That anti-tank weapons modify tank surprise is obvious, but they cannot annihilate it, because the main power of the tank does not rest in its armour and weapons but in the paralysing effect its *mobility* has on the enemy's mind.

In Poland in 1939 the effect of the German armoured assault was im-

mediate, for within forty-eight hours of the initial attack the Polish G.H.Q. was paralysed, whereupon the body of the Polish army fell to pieces. This sudden collapse was not only due to the unmechanized state of the Polish army but, as may be seen in the next great assault on the Netherlands and France, to correct tank tactics, for in May, 1940, the French had greater numbers of tanks than the Germans, as well as tanks of a superior quality.

In this second German invasion a British staff officer, at the time serving in France, on 19th May wrote: "The Panzers still drive about at their own sweet will . . . with no main body behind them. No infantry within sixty miles, just motor cyclists and tanks . . . News that the Panzers are in Amiens. This is like some ridiculous nightmare. . . . The Germans have taken every risk—criminally foolish risks—they have got away with it . . . they have done everything that should not be done by orthodox, book-trained, stereotyped soldiers, and they have made no mistake. The French General Staff have been paralysed by this unorthodox war of movement. The fluid conditions prevailing are not dealt with in the text-books, and the 1914 brains of the French generals responsible for formulating the plans of the Allied armies are incapable of functioning in this astonishing layout."

Stop Those Tanks!

Not only were the French G.H.Q. surprised, but also the German, for on several occasions during the assault à *outrance* General Guderian was ordered to halt his tanks so that the infantry might catch up!

In this case it may be said that the French tactical collapse was due to faulty tank organization. Though this defect certainly contributed to German success, in the battle of Tunis in 1943, when the British and Americans were at clinch with the Germans and Italians, identical results are to be seen. At the time of the final Axis collapse a British war correspondent wrote: "Our tanks roared past German airfields, workshops, petrol and ammunition dumps, and gun positions. They did not stop to

take prisoners—things had gone far beyond that. If a comet had rushed down the road it could hardly have made a greater impression . . . the German generals gave up giving orders since they were completely out of touch . . . in a contagion of doubt and fear the German Army turned tail . . . and became a rabble.

Again, it was the same in 1944 during the invasion of Normandy, when tanks were called upon to operate in a difficult terrain and were faced by numerous and powerful anti-tank weapons. In August, when General Patton broke through at Avranches and set out on his headlong advance, this is what we read: "Halt for nothing" was the guiding principle of the armoured columns. . . . Forward patrols [of armour] shot up everything, batteries, headquarters, strongpoints. . . . Disorganization robbed them [the Germans] of both a plan and the means to carry it out."

Surprise was as potent in 1944 as in 1939 or in 1917; therefore we may conclude that it will remain so, though the means of effecting it will have to be modified, not only according with the terrain but also with reference to the anti-tank weapons tanks will be called upon to face.

What does all this point to? That whatever tank organization is elaborated in the future, it will be defective unless it permits of violent surprise, and the violence of surprise will in the future, as in the past, be in direct ratio to the mobility tanks are able to develop and maintain.

Supply.—The above logically introduces the problem of logistics, that branch of the art of war which embraces transport and supply and which constitutes the basis of strategy and tactics. Because, as Napoleon truly said, "an army marches on its stomach," it follows that unless the speed of its supply services is greater than or equal to that of its fighting arms, the latter cannot make the most of their mobility.

Two examples taken from the last war suffice to illustrate this: namely, the initial German Russian campaign and the 1914 Allied campaign in France.

In the first the Germans were faced

by a very different problem from the one they had to solve in France. The depth of Russia was immensely greater, and whereas in France road and rail communications were plentiful and good, in Russia they were few and indifferent. Added to this on account of climate—rain, frost, and thaw—the season of mobile operations in Russia was restricted to between the months of June and October.

To win the campaign was possible were Moscow occupied before the autumn rains set in, because Moscow is the hub of the entire Russian rail system, and once gained, the supply of the Russian armies would be so crippled that a knock-out blow might have been struck in 1942. The logistical problem was, therefore, how to cross a distance of some 800 operational miles in three months.

As in France, the campaign was opened with an armoured assault, which was so rapid that in twenty-four days some 500 miles were traversed and Smolensk reached. Could this speed of advance have been maintained, there is little doubt that Moscow would have been occupied early in September. Why was it not maintained? Setting aside Hitler's faulty strategy, the answer is, because of the breakdown of the German supply system. The armoured divisions were not fed by cross-country supply columns, but depended on lorry transport which was tied to the roads, and in rainy weather was restricted to the main roads—few in number—because the secondary roads were at once converted into rivers of mud. Further, the motorized infantry divisions, also lorry borne, could not keep pace with the armoured divisions, which neither could nor were intended to hold ground.

After 10th October, General Gudderian writes: "The next few weeks were dominated by mud. Wheeled vehicles could only advance with the help of tracked vehicles," and "these latter, having to perform tasks for which they were not intended, rapidly wore out." Also he informs us that "corduroy roads had to be laboriously laid for miles on end in order to ensure that the troops received even the limited supplies available. The

strength of the advancing units was dependent less on the number of men than on the amount of petrol on hand to keep them going." Lastly, when winter came, "in order to start the engines of the tanks, fires had to be lit beneath them. Fuel was freezing on occasions and the oil became viscous."

The second example is very different, because distance was less, roads good, and climate normal Western Europe summer weather.

Logistics and Strategy

On 31st July, 1944, General Patton's Third Army broke through the German left flank at Avranches, after which the speed of its advance was such that a supply crisis began to develop. When on 17th August, the Third Army neared the Seine, General Eisenhower informs us that "truck transportation became utterly inadequate to cope with the situation," and, in consequence, aircraft had to be withdrawn from the newly created First Allied Airborne Army as well as from the Strategic Bombing Force in order to supply Patton with 1,000 tons of petrol daily, a figure which soon had to be doubled. "This type of last-minute planning," comments General Martel, "is not the way to organize these vitally important administrative arrangements in fast mobile warfare."

Why did the crisis take hold? The answer is, because air power had been so fully exploited strategically and tactically that, when supremacy in the air was assured, it was found that its administrative possibilities had been overlooked. In fact, it had not been grasped that, because the aeroplane can dispense with roads and because it is the most mobile vehicle in existence, it is the ideal supply transporter when cost does not enter the question. Had fewer bombers been built, and in their stead had General Eisenhower had at his call, say, 2,000 flying four-ton tankers, there need have been no pause west of the Rhine; in which case the high probability is that Berlin would have been entered by the Allied powers long before Christmas.

The following, therefore, are the

two most important lessons to be learnt and applied before another war engulfs us: (1) Because armoured forces move on tracks, their supply vehicles must do the same. And (2) because in highly mobile operations road, rail, and cross-country supply may not prove sufficient, organized aerial supply columns must be at hand to feed the chase at a moment's notice.

Granted power to surprise and means to supply armoured forces, I will next turn to the question of tank co-operation and independent action, which are best considered conjointly.

Co-operation and Independent Action.—During the last war, and mainly on the insistence of Field-Marshal Montgomery, it was decided that a dual-purpose tank was all that was needed—that is, a tank which equally well can co-operate with infantry and work independently.

This conception, due to confused thinking, was quite unknown to the original tank designers, who worked on the principle that a heavy, slow-moving tank would be required to co-operate with infantry and a lighter and faster one to co-operate with cavalry. What, at the time, was not appreciated was that, though heavy tanks and infantry could co-operate, as they successfully did at the battles of Cambrai and Amiens, on account of the vulnerability of the horse, light tanks could not effectively do so with cavalry. What they could do, however, was to replace cavalry altogether.

Between the two wars this replacement was made—our cavalry regiments were converted into tank regiments and equipped with medium tanks. But during this change-over, mainly because of its cost, the heavy assault tank faded out of the picture until 1938, when it was resurrected in the form of the Infantry Tank and organized in Army Tank Brigades. At about the same time the faster tanks became known as Cruisers and were formed into armoured divisions. The main differences between these two types were that, whereas the Infantry Tank had a maximum speed of 15 m.p.h. and was protected by armour varying from 78 mm. to 65 mm. in thickness, the speed of the

Cruiser was 28 m.p.h. with armour varying between 40 mm. and 20 mm. Both were armed with a 2-pdr. gun.

Meanwhile, late in the field, in order to guarantee the greatest output of tanks, the Germans concentrated on two main models, the Pz. Kw. III and Pz. Kw. IV (a close support tank). Both were medium machines with a speed of about 20 m.p.h. the armour of the one varying from 50 mm. to 30 mm. and of the others from 30 mm. to 20 mm. The first was armed with a 50 mm. gun and the second with a 75 mm. With these machines, supported by a large number of six and nine ton light tanks, the Germans overran Poland and France in 1939 and 1940.

It was in the second of these campaigns that the British Infantry tanks, under General Martel, proved their worth. Of their action on 21st May, 1940, he writes: "This attack was just the type of action for which the infantry tank was intended. There was no case of a long move round a flank for which cruiser tanks are needed. . . . His tanks [German] were knocked out quite easily," whereas some of our tanks "were hit fifteen times without having any effect on the tank or the crew. When a tank can advance and ignore the fire of the enemy anti-tank guns, a great moral effect is produced. Such a tank dominates the battlefield."

The obvious lesson of this action, that in close-fighting armour and gun power and not speed are the decisive factors, was but partially appreciated by the Germans. Though they reinforced their armour, they continued to use Mark III's and IV's until in Russia, in November, 1941, they came up against the Russian T.34 cruiser tanks. These machines were more heavily armoured and gunned, and against them the German 37-mm. anti-tank gun proved ineffective. "The result," writes General Guderian, "was a panic."

From then on the battle of the types steadily passed from its independent cavalry to its co-operative infantry phase. We produced the Churchill Infantry Tank with armour varying from 90 mm. to 75 mm., and the Germans the Panther and Tiger,

the one with from 100 mm. to 45 mm. of armour, and the other with 102 mm. to 62 mm. Of the value of these infantry tanks two examples suffice: the break-through at the battle of El Alamein in 1942, and the fighting in Normandy in 1944.

In the first, which was a battle of assault against a prepared position, the cruiser tanks used—namely, the American Grant and Sherman—were not sufficiently armoured, and in consequence suffered heavy casualties. "There is no doubt," writes General Martel, "that if a brigade of Churchill tanks had been available, they could have overcome . . . [the] 50-mm. anti-tank guns quite easily." Actually, only four Churchill tanks were used in this battle. "All . . . were struck many times by 50-mm. anti-tank guns, and there was only one penetration."

Battle of Types

Of the fighting in Normandy, Martel says: "The German Panther tank showed its superiority against our Cromwell tank [cruiser] . . . by having heavier armour in front and a more powerful gun. The ground in Normandy was so enclosed that head-on fighting between tanks was a common occurrence and an advantage to the Panther tank . . . Our Shermans and Cromwells were no match for them and our Churchills were only a little better. What we wanted in this type of warfare was the new design of really heavy infantry tank which we had always asked for, but this was not available. Future operations however, showed that the Panthers were equally unable to hold up our armoured divisions [cruisers] when it became a war of movement in open spaces."

The conclusions to be drawn from these two examples, and others could be added, are that, whereas in position warfare armour and gun dominate, in mobile warfare it is speed which does so. This truism, which should never have been lost sight of, has now been accepted, for our present policy is to build three main types of tank, a cruiser, an infantry tank, and a light tank. Therefore, in idea, we are approximately back to where

we were in 1916-18, and can design for the future on the proved logic of the past.

War with Russia.—This being so, our tank problem is no longer a question of types; instead it is one of proportion between types *vis-à-vis* Russia, our most formidable potential enemy; and the answer must be sought in the tactics and organizations of the Russian Army. What are the facts?

The first is, that the power of the Russian army derives from its mass, and not from its mobility: it is a quantity army and as such it stands unrivalled. The second is, in order to prevent congestion of supply, mass compels movement over a wide front. And the third, which logically springs from the second, is that Russian offensives are nearly always launched on extensive fronts. They may be compared to inundations which peter out against stubborn resistance and flow through at weak points. They seek the lowest tactical levels, and normally are, therefore, slow and percolative.

Like all past Oriental armies, the Russian is composed of two categories of troops, a *corps d'élite* and an armed horde. The first is *par excellence* the fighting instrument; the horde is secondary to it, and should the enemy's resistance be negligible, is the occupying instrument which, by flooding over the territories conquered by the first, holds them in submission by terror.

The existing *corps d'élite* is composed of heavy tanks and picked infantry working in close combination. The horde, of infantry, cossacks, etc., largely depends for supply on horse-drawn vehicles. Though in dry weather the expanses of Russia enable horse transport to move across country, in the highly cultivated and urbanized areas of Central and Western Europe, many of which are also mountainous, masses of horse-drawn vehicles are road-blockers.

Because both categories of troops have to be supplied, it follows that the greater the horde the more complex becomes the supply of the *corps d'élite*. Therefore, that the Achilles heel of the latter is to be sought in

its supply system. Today this holds good more so than in the past, because petrol-fed vehicles cannot live on the land; throughout they have to be supplied from the rear.

Without supply—particularly petrol and oil—the Russian *corps d'élite* becomes inoperative. Therefore the problem is, not how to defeat it by superior strength, but by superior tactics: (1) How to slow down the *corps d'élite* by an elastic frontal resistance, and (2) how to break through the Russian front at selected points and paralyse the communications in rear of it. Otherwise put, how to cut the *corps d'élite* off from its supply.

So far as tanks are concerned, the first of these operations demands machines which can deal with the heaviest Russian tank, also powerful self-propelled artillery and large numbers of mobile anti-tank weapons. The second demands tanks of the highest mobility as well as motorized infantry. Both should be supported by powerful tactical air forces.

It may be said that the Russians will be able to establish so formidable a battlefield that a break-through, such as witnessed in France both in 1940 and 1944, is no longer possible. But it should not be overlooked that at the opening of a war conditions are generally more fluid than later on. The reason is that the sudden change over from peace to war is followed by an experimental tactical period in which no one from commander-in-chief to private soldier is certain of himself and in which friction is prevalent until operations are run in. The psychology of an untried army differs from that of a salted one, and though, when a war is well ground in, setbacks appear at their true value, at the opening of a war they are apt to be exaggerated. Thus, for instance, should the Russian armies, on taking the field, suddenly suffer an unexpected reverse, its effect, not only on their leaders and their masters in the Kremlin, but also on the satellite and subjugated peoples, might well prove catastrophic.

To repeat the tank tactics of the last war, whether on the lines of Guderian in 1940 or of Patton in 1944,

is not sufficient, for copies seldom equal originals. Something novel and surprising is, therefore, needed.

Night Operations.—Today the only tactical field which remains largely unexploited is night fighting. Once armies went into winter quarters and cut down their operational year by six months. Still armies go into night quarters and cut down their operational day by twelve hours. When are soldiers going to tumble to it that an army which can fight round the clock has a hundred per cent. advantage over one which can fight only half-way round it?

Night Into Day

This problem was tackled before the last war and led to the invention of the C.D.L., a tank fitted with a powerful projector of special design emitting a fan-shaped, flickering beam of light which illuminated a wide field and dazzled the eye. The projector was protected in such a way that it could not be put out of action by anything less than a direct hit with a shell which could penetrate five inches of armour.

The purpose of this weapon was to solve the problem of night fighting on a large and organized scale, enabling an attack to be carried out more methodically and rapidly than during daylight, and far more economically and securely; for whereas the field over which the attacker advanced was brilliantly illuminated, all the defender was able to see was a wide expanse of dazzling light which obscured everything behind it, and which was so brilliant that it rendered aimed fire by eye impossible.

That the C.D.L. was considered of value is proved by the fact that two brigades of C.D.Ls., one of three battalions and the other of two, were raised in England, as well as two Armoured Groups, each of three battalions, in America. Nevertheless, though prior to D Day (6th June, 1944), the 1st (C.D.L.) Tank Brigade and the 10th (C.D.L.) Armoured Group were fully mobilized and ready to proceed overseas, so little interest was taken in the new weapon that it was not until 11th August that the first of these formations was

landed in France, the second following eleven days later. Even then, instead of being used in the operations following on the break-through of the U. S. Third Army, operations in which the Germans could seldom move except under cover at night, the six battalions were never moved forward from their disembarkation camps and were gradually disbanded, as were the rest.

Though the C.D.Ls. have long vanished on the scrap heaps, the idea of turning night into day still offers endless tactical possibilities, the most obvious being the ability to break through an enemy's front under cover of darkness and put *blitzkrieg* into pyjamas. If in the last war the French generals were paralysed by the German tanks in broad daylight, what would have been their state of mind had it been possible for the latter to operate even more freely during the night than during the day, and thereby establish a round-the-clock *blitzkrieg*? Transfer this possibility to the situation now facing us, and a solution to the problem of how the Russian front can be penetrated and its rear services thrown into panic becomes apparent. Thus we return to the basic tank problem—surprise.

Atomic Warfare.—Lastly, as regards atomic weapons, what influence will they have on the tank? One thing is certain, their introduction will enhance the value of mobility, because rapid dispersions and concentrations, such as can be effected with cross-country vehicles, will become doubly necessary. Further, as the 1951 tests in Nevada have shown, armoured vehicles are more immune to blast, heat, and radiation than unarmoured. Therefore, of all forces armoured ones are the least vulnerable on the atomic battlefield.

The deductions to be drawn from this are that, in future warfare, armies should not only be armoured but, in order that they may be able to disperse and concentrate with extreme rapidity, they must be capable of developing a far higher mobility than in the past. On this question Major Lamar McFadden Prosser writes:*

*"Armor," Vol. LXI, No. 1, January-February, 1952.

"Forces must concentrate only at the critical moment of action and disperse rapidly thereafter. At this critical moment, and only then, should the force offer a profitable target for atomic weapons. The swiftness of the concentration must introduce the element of SURPRISE and so reduce the danger of atomic annihilation."

Further, he adds: "All now seems to hinge on mobility. The speed of manoeuvre now demanded may require that all ground forces be mounted. The assembling of regiments of foot soldiers is much too time-consuming and would certainly reduce the possibility of surprise and increase the time of vulnerability. To mount the infantry in trucks (so-called motorized divisions) is to remain road-bound, and this would be fatal. The answer seems to be tracked vehicles. Whether or not these vehicles should also be armoured, introduces problems too numerous to be settled without experimentation. But that all troops will be mounted in tracked vehicles appears to be inevitable."

Thus we reach the summit of the second great revolution in the organization of armies.

Conclusions.—Finally, what does all this point to? That, though tactical essentials remain constant, unceasing readjustments of means have to be made in order to meet the changing conditions of war. The soldier has still to hit, to guard, and to move; he has still to endure, to be supplied, and to surprise. New weapons do not change these things, but how to effect them always changes.

Fear of the atomic bomb may abolish war by making it appear too unprofitable to wage; but as long as wars continue, though this annihilating weapon will change methods, it can no more change the essentials of tactics than did the discovery of gunpowder. The soldier will go on hitting, guarding, and moving. Without endurance he will be unnerved; without munitions and food he cannot fight, and surprise will remain for him his staunchest friend and most deadly foe.

Though the roots of future warfare are hidden in the past, the plant of war must be cultivated creatively. No stereotyped copying is likely to succeed. Victory is to be sought in the imagination.

War-Making Powers

by CAPTAIN EDWARD J. ROXBURY, JR.

Against the background of a United Nations action in Korea and truce team operations at several critical trouble spots in the world, the international body's legal structure for military action to preserve the peace is a matter of great interest. Can the UN order out forces against an aggressor?

IN April 1945, with the flush of victory permeating the United Nations, a meeting was held in San Francisco to write the charter for a new world organization. This organization was to include all "peace-loving" nations of the world, and these nations were to work together to ensure the peace. This new world peace body was enthusiastically accepted by the majority of the people of the United States.

In 1919, President Wilson had brought back from Paris the covenant for a similar organization, boldly titled the League of Nations. This country had turned its back on it. There was no less a desire for universal peace than in 1945, but in difference born of the long war, suspicion of foreigners, a fear of commitments, and, perhaps most of all, domestic politics kept the United States out of the League of Nations. Senator Borah expressed a widely held view in a debate in the Senate concerning the approval of the League, when he said, "there are some things in this world more to be

desired than peace, and one of them is the unembarrassed and unhampered and untrammelled political independence of this republic. If peace cannot be had without our surrendering that freedom of action, then I am not for peace."

In 1919, rejection; in 1945, almost universal acceptance. A recital of the reasons for this change is neither necessary nor pertinent. But what is remarkable is that in either case acceptance or rejection by the majority of the people of the United States was largely based on the same misunderstanding of the role of these world bodies. The misconception as to the actual amount of power possessed by these organizations was the cause of this misunderstanding.

The League of Nations and the United Nations have been called "super-governments"; they have been likened to our Congress or the British Parliament. They have been characterized as law-making bodies which would impinge upon our sovereignty and lay down rules for the governing of the world. In both cases these definitions were to a great extent believed. This belief was a large factor in turning the United States away from the League of Nations in 1919. In 1945, perhaps believing that "un-

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of the UNITED NATIONS

embarrassed and unhampered and untrammelled political independence" was not quite so important as peace, we accepted the United Nations.

That either world organization was or is in any way a "super-government" or a law-making body is, of course, untrue.

The United Nations has had, however, a further burden of misunderstanding to bear. As the UN came into being the idea was prevalent that there also had been created within it a "world police force" made up of soldiers of all nations, or a multinational army under United Nations control. Critics said that our Congress' prerogative of declaring war had been abdicated in favor of the Security Council. At best it was somehow felt that if called upon, the United States had to furnish troops to the United Nations. Confusion about the war-making power of the UN still exists today.

The League of Nations Covenant had done little more than hint that in case of dire need the members would band together militarily to enforce the peace. The United Nations Charter seems to go much further. Paragraph 1 of Article 43 says, "All Members of the United Nations, in order to contribute to the maintenance of international peace and security, undertake to make available to the Security Council, on its call and in accordance with a special agreement or agreements, armed forces assistance, and facilities, including rights of passage, necessary for the purpose of maintaining international peace and security." Article 47 creates for the use of the Security Council a Military Staff so it may properly use the military forces for the maintenance of peace and security—in effect, an United Nations army, navy, and air force.

This would seem to mean that the "world police force" was actually legally in existence. Each member should have available, on call, an

armed force which would perform at the bidding of the Security Council.

In Korea, there is every external manifestation of this force. The United Nations flag is used; the troops are called the United Nations Forces; the commanders are issuing orders as United Nations orders. The army there is multi-national and although the United States is furnishing the ranking officers, other nations are consulted on major decisions. Political decisions were commonly supposed even by members of the committee on Armed Services of the U. S. Senate to come from the UN itself. All outward aspects make the forces fighting in Korea appear to be an army fielded by, and under the command of, the United Nations.

The Big Question

Can the UN order the United States and other nations to furnish troops to repel a new aggression if there is another breach of the peace similar to Korea? Does the United Nations, in other words, have any practical war-making power?

Actions of some members of the UN give us more than a hint of the answers to these questions. The dramatic refusal of Russia to do anything but hinder the avowed purposes of the fighting in Korea does not bring her dismissal from the UN. The failure of many nations, although friendly to our cause, to furnish troops or equipment to Korea has brought them no reprisals. These examples indicate that there must be some flaw in the assumption that the United Nations can order armies into action.

The flaw is to be found in the Charter of the UN itself and in the assumption, at the time of the writing of the Charter, of Big Power accord. If Article 43 is reread, the phrase "in accordance with special agreement or agreements" will be found. Paragraphs 2 and 3 of the article go on to explain what is meant

by this phrase. They are worded so that no nation is compelled to contribute armed forces to the United Nations unless they have made an agreement beforehand as to exactly what armed forces they are willing to allow it to use. In other words, before the UN can have an army, the separate nations must agree to give it one.

At no time, including the present, since the United Nations has been formed has any nation made any agreement to furnish any type of armed forces to the international body.

In all fairness to the Charter, it should be said that an article is included which was supposed to take care of the interim period between the signing of the Charter and the reaching of military agreements with the UN. But, this article, 106, again is based on Great Power cooperation, and consequently has had no useful function.

Actually, then, the UN has no practical war-making power at all, simply because it has no army.

In light of this, it is interesting to read the resolutions condemning the actions of the North Koreans as a breach of the peace and urging aid for the South Koreans, which were passed by the Security Council on June 25 and 27 of 1950. They very carefully use the words "calls upon" and "recommends" when trying to get nations to take action against the North Koreans. No stronger words could be used, for no members were compelled to obey. Suggestion was all the power the United Nations had.

Although it is evident that the United States and many other nations will voluntarily furnish forces to fight for the principles of the United Nations, the fact remains that, at the present time, the United Nations as a political body has no actual power of its own to mount an army in the field or to order any nation to do so.

Tank Gunnery in Eastern Korea

by **FIRST LIEUTENANT SETH WIARD, JR.**

ALONG the eastern front in Korea, armor, distasteful as the thought may be, is cast in the role of front line artillery. Both in the Punchbowl sector and in the Mundung-ni Valley, the only movement of armor was onto and off the MLR.

In this entirely different part that armor has to play on this sector of the front, several little-thought-of difficulties were encountered and overcome. They should prove of interest to all Armor officers.

The absence of enemy armor activity on the eastern front leaves armor only bunkers, gun positions, trenches and small groups of enemy personnel as targets. Especially in the eastern section of the Punchbowl, tank targets are far beyond the accredited accurate range of the 76mm M1A2 mounted on the M4A3E8 tank with which this company is equipped.

Effects of Temperature Variation

It was standard practice, on line, to keep 9 extra rounds of HE on the turret floor as a supplement to our basic load. When shooting at targets at a range of 4,000 yards or more, it was found that a definite increase of approximately 100 yards was necessary when we switched to ammunition from the turret wells. This was caused by the slightly lower temperature of the rounds in the wells as opposed to those lying on the turret floor. This lessening of range was especially noticeable whenever ammunition from our storage bunkers was used. It is suggested that, *whenver possible*, ammunition from a

common source be used to minimize correcting ranges due to temperature variation of shells. There are few occasions when this cannot be done with armor on the MLR. This factor of range variation is only applicable during the extremely hot months of June, July and August.

Bunker Destruction

Probably the most frequent target that the tanker will be called upon to destroy is the bunker. In general all that can be observed of this kind of installation is a small aperture. Often this kind of target can be located only by observing personnel entering and leaving a certain area that may appear to be solely a group of bushes or small trees. For destruction of a target of this type it is recommended that, if one cannot see an aperture, the tank use HE to expose a side or an aperture, then place APC at the point about a yard below the center of the mass or aperture. This will crack the foundations and allow HE (delay) to clear out the walls and collapse the ceiling. If it is impossible to do this due to an extremely heavy construction, WP should be placed in the aperture for incendiary and anti-personnel effect.

The North Korean and Chinese forces have a habit of constructing numerous dummy bunkers, which are built solely to cause depletion of our ammunition supply. It has been found that the most effective way to deal with this sort of object is to damage the bunker, not to destroy it. After this has been accomplished, the subject bunker *and all approaches* should be kept under constant observation to check on any rebuilding or traffic into or out of it. If an appreciable amount of activity is noticed

in or around the bunker it should be dealt with as any other installation of that kind.

HE—WP Variations

Although the firing tables of the 76mm gun state that the shells HE, M42A1, and Smoke, WP T13E2, are identical in so far as ballistics are concerned, this was not found to be true at long ranges in actual combat use. Adjustment of HE and WP proved that a definite *range decrease* was necessary to bring the WP to the point of HE impact. In firing at targets at a range of 3,000 yards or more it was necessary to decrease the range by 50 yards to place the WP on target. At targets within the normal effective range of the 76mm gun, this variation was not too noticeable, but as I stated before, the majority of our targets were beyond the accredited effective range.

Indirect Tank Fire Adjustment

Replacements from the States were found to be generally unfamiliar with indirect fire adjustment. We were forced to train them on line in the use of the M9 Quadrant and the Azimuth Indicator. A knowledge of these instruments is indispensable inasmuch as the majority of adjustment was made by the platoon leader from a battalion or regimental observation post and the gunners were unable, in a large number of cases, to make an adjustment fine enough with their direct fire sights. It has been stressed in all gunnery training that a finer adjustment than 50 yards was impractical with the tank gun. When firing at OPs, which were usually placed on top of ridge lines, an adjustment of 25 yards or even less had to be made to insure a target hit. Many

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times an adjustment of 50 yards would place the projectile over the ridge, while the strike of the projectile, if not increased, would be well below the target. These situations necessitated an addition of 25 yards or less to obtain a target hit.

Concrete Piercing Fuses

Concrete piercing fuses were available to all platoons in the company and were used both in the Punchbowl and the Mundung-ni Valley. Contrary to popular opinion, the use of concrete piercing fuses *does* alter the ballistics of the M42A1 shell. Whenever we replaced the PD M48 fuse with the CP T105 fuse it was necessary to increase the range to obtain a target hit. A general rule of thumb that proved to be practical was to make the same adjustment as if we switched to APC with a muzzle velocity of 2600 FPS. As a check on my findings, I inquired of Lt. S. Randall of C Battery of the 21st AAA Battalion, how he observed the effect of the fuses. (We supply his 90mm gun with the CP T105 fuse.) He stated that he was forced to make approximately the same adjustment when firing this fuse. We only used this fuse against rock walls and concrete bunkers, due to the fact that it must strike a very hard object to detonate. When using these fuses the best results were obtained by first clearing all logs and dirt away from the object with HE. This was necessary due to the fact that the shell would tend to slow up before striking the actual concrete or rock and thus fail to strike hard enough to detonate.

Dispersion Due to Overheating

Sustained firing at long ranges will have a noticeable effect upon the accuracy of the tank gun. Firing at over 3,000 yards, if continued past 15 rounds, will tend to become erratic and result in a waste of ammunition. The normal dispersion pattern was greatly elongated almost to the point of impracticability due to the overheating of the gun. A method that we devised that proved very effective was to use one tank to initially take the target under fire. As soon as the dispersion pattern became stretched so as to make adjustment impossible, a second tank that had been observing the firing would

Quotable Quotes

The following is a quotation from a recent address by Lt. Gen. Willis D. Crittenger before the assembled officers of the staff and faculty of the Armored School:

"The Korean fighting is a special kind of war, and a very important one to us Americans.

"However, looking beyond Korea to possible action elsewhere, with a completely different situation, we anticipate that full weight will be given to the value of the armored division and combat command.

"We can see the urgent necessity for the hard-hitting, self-contained armored units that knifed their way across France and Germany.

"No American can doubt the combat effectiveness of our proven United States armored units of divisional size, or even an armored corps made up of Armor, Infantry, Artillery, Engineers and all service components, supported overhead by tactical air.

"They demonstrated their worth in World War II, and will do it again, if called into action.

"So while giving the fullest, possible accolade to the small tank units fighting so magnificently in Korea, we must not lose sight of their big brother, the armored division, and the proven wallop he carries.

"Both are essential to present-day American success at arms.

"And I personally will not be convinced that we are making the maximum use of armor, until we also organize Armored Corps."

"In ground warfare, armor has grown to a position of importance in the great team of those combat arms which meet the enemy face to face.

"However, the mobile, armor-protected fire power of a tank, which provides the commander with a means of making a fast-moving, decisive blow, with a minimum cost in casualties, dictates that Armor must presently continue to maintain its position of importance on the battlefield.

"Armor in division strength, incorporating all the technological advances which our industrial supremacy can provide, may be counted upon to make a decisive contribution to victory in any major conflict in the future.

"It has been conclusively proven that insofar as ground forces are concerned, Armor properly supported, is one of the most decisive combat arms, the battlefield has ever known."

take over the target. This tank would obtain the exact range from the first tank by radio and be able to place the first round close to the target. Of course, the rate at which the gun would overheat is entirely dependent upon the rate of fire, and individual platoon leaders would have to work that out for themselves.

Tank Positions

In general, our tank positions were on the skyline in hull defilade and were not moved out of firing position, except for maintenance. This, of course, goes against basic armored doctrine almost 100%; however, a careful study of the reasons behind this and the advantages gained from so placing our tanks will, I believe, show that more is to be gained from this than is lost.

In the first place, by having our tanks on the skyline we thus throw upon the enemy the same problem that we encountered in shooting against their OPs. Any rounds that are short of our tanks will fall below them and cause no damage. Any overs will fall into the valley to our rear and will be impossible to adjust. When you couple this with the fact that our tanks can be firing back at the opposing gun within 3 or 4 rounds, one can see the advantages to this method.

Probably the strongest argument that I can advance in favor of leaving our tanks in firing position constantly is the rapidity with which we can engage targets of opportunity. On one occasion in the Mundung-ni Valley I was able to put an HE shell in the middle of a group of Chinese 35 seconds after they had been observed from the Regimental OP. No other weapon on the MLR can engage a target as rapidly and effectively as a tank.

Adaptability of Armor

As many tank officers have realized, Korea is not particularly well suited to armor. However, if there are U. S. troops operating in any terrain, armor can operate in that country. It is true that we cannot operate in the manner that we would like to, but adaptability is one of the strong points of armor. In Korea, under adverse conditions, armor has again risen to the occasion and proved its indispensability as a member of the combat arms.

UNIQUE in this unit's history, the Fordability School of the 1st Battalion, 14th Armored Cavalry, now stationed in Germany, has proved to be a lesson not only in fording but also in preparation for instruction. Fording is not well covered in standard Army publications and few training directives specify this subject in the unit training schedule. Yet, if armored units are to maintain their vital mobility, they must be capable of fording streams successfully and expeditiously at any time, and the source of capability is training.

Perceiving this, the Battalion Commander determined that his unit needed to expend some time and effort in this specialized type of training. However, presenting this instruction properly and completely requires a great deal of research and preparation and it was decided that the best approach to the problem was to set up a school which would present a one day course in the subject of fording. The school was to be organized and conducted by a staff officer, and school troops were readily available within the battalion. A suitable location for a demonstration could be found nearby.

I was the staff officer chosen and at the outset received one of the greatest aids in carrying out any of these *odd job* assignments; a specific, well-written directive. This two-page letter told me the type of thing that was wanted, some features which were desired, and gave me a deadline date. Although a first reading of this letter was enough to get me going, I was to refer to it again and again as a check sheet to assure myself that I was accomplishing what I had been ordered to do.

Since the first part of the course was to be a classroom conference, my first step was to research and prepare for this. I collected Technical Manuals for all the vehicles in the reconnaissance battalion, or likely to be assigned to the battalion in the future, plus anything else written which might be usable as an information source. There was not time to send

FORDABILITY

by CAPTAIN RICHARD D. TRUE

Mobile operations take armor over all kinds of terrain in all kinds of weather. Among the many obstacles encountered are natural and man-made watercourses, which must be crossed if armor is to keep rolling. Here is the first of a two-part article on the selection of sites and fording techniques for tanks and organic vehicles in a battalion fordability school

to any of the service schools for whatever they might have to offer, but this source should not be overlooked in such preparations. After reading and extracting all that I found applicable, I determined that the outline for the course should be as follows:

1. Fording Capabilities of Reconnaissance Battalion Vehicles
2. Rivers and Streams, General
3. Rivers and Streams in the vicinity of the Battalion's Home Station
4. Characteristics of Fords
5. Selection of Fords:
 - a. From Maps
 - b. From Aerial Photographs
 - c. By Aerial Reconnaissance
 - d. By Ground Reconnaissance
6. Fording Operations

This was to be followed by a demonstration, which would show the fording capabilities under a variety of conditions of each of the vehicles assigned to the battalion, and would show, if possible, some of the things our vehicles could not do. Simultaneous with the writing of the instructor's manuscript, were the selection of a location for a demonstration and

preparations for it. The instructor's manuscript was prepared for use in the classroom and also to be handed out to anyone who wished it for his own use. Following are extracts from the manuscript which will be followed by a description of the preparations which went into the demonstration, and an account of the demonstration as it actually took place.

Fording Capabilities

The fording capability of a vehicle is its ability to operate satisfactorily while traversing water and to continue to operate satisfactorily thereafter. Fording capabilities are based on several factors. The first is the total depth of water the vehicle can negotiate without drowning the engine. Second is its ability to run through the often muddy and difficult conditions of streams, banks and bottoms. Third is the ability of accessories and components of the engine and drive system to withstand the effects of submersion. Fourth is the provision for elimination of any water which may penetrate any of the various vehicle sub-assemblies, such as starter, generator, crankcase, clutch housing, differential, and so forth.

The fording depths of the vehicles

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currently assigned to the battalion and likely to be assigned in the foreseeable future are considerably improved over the World War II types, with the exception of the half track, which is a World War II vehicle. This has been accomplished by higher positioning of the carburetor air intakes, oil filler pipes and fans.*

In addition to these increased depths, provisions have been made in the design and manufacture of the vehicles presently issued to make them more waterproof by sealing all or parts of assemblies which are immediately affected by immersion in water. Watertight housings are provided for all instruments, switches, starter, generator, regulator, battery vents, and the ignition system, including cables. The majority of these

parts require venting to prevent damage from condensation moisture within the housings, and a system of venting tubes is provided for that purpose. This system is general and is found throughout all wheeled and combat vehicles of recent production.

The basic design of the vehicle, whether tracked, half tracked or wheeled; its weight, ground pressure and engine power determine its ability to pass over stream banks and over muddy stream bottoms and approaches.

Maintenance problems are increased in fording operations, in spite of the additional precautions against water taken in the manufacture. These problems are minimized if the vehicle is in good condition before fording and is properly adjusted and lubricated throughout, to include maximum filling of the brake system to reduce the entry of water. With the engine operating at maximum efficiency and proper after-fording maintenance carried out, fording will not hurt military vehicles. If the vehicle has been in the water an appreciable length of time, or has been completely submerged, immediate precautions must be taken to halt deterioration and avoid damage

to the engine and other parts. If water in any great amount has entered the engine the vehicle must be evacuated for overhaul.

After fording, all lubrication must be checked for evidence of water in any of the lubricants. If there is water, drain the lubricants, flush the assembly and add new oils or greases. Lubricate the chassis and repack wheel bearings. Bleed the brakes and add fluid as needed. Clean the carburetor bowl, fuel strainer and filter. If water has entered the fuel tank, drying of the tank, lines and pump is required. Open and thoroughly dry the distributor. Test the battery with a hydrometer and check for proper liquid level. Check all electrical connections for signs of corrosion, especially the bayonet type connectors used on many circuits. Clean the air cleaner and change the oil filter. Wet brakes are ineffective and should be dried at once after leaving the ford by applying them several times *before* they are needed. The heat thus generated will dry the brakes. Occasional grabbing may result from soaking of brake linings but should occur only once or twice.

Precautions must be taken to prevent immersion of optical equipment on tanks, except periscopes used for driving. In addition to being highly damaging to the interiors of these delicate instruments, any cleaning or drying of their interiors is an Ordnance job and involves loss of the item to the unit for a period of time. Tank ammunition, being stored low in the hull, is subject to immersion if the tank is in the water long. A brief wetting will not hurt it but it should be removed from the tank and wiped dry as soon as possible. Some rounds which have been in the tank for some time may have projectiles loosened by vibration; this will allow water to seep into the powder case. Check for this and replace any that show evidence of wet powder. Small arms ammunition, in cans, will not get wet in fording unless the can is defective. Check for water in the cans after immersion and dry any ammunition that is wet.

Rivers and Streams

Knowing the characteristics of rivers, streams and other water channels is an aid to prediction and selection of fords. Certain generalizations can

*A chart showing the heights of these points from ground level was included in the instructor's manuscript. Fording depth figures taken from the Technical Manuals were readily compiled into chart form for presentation. Two charts were prepared, one large one for classroom use and mimeographed copies for inclusion in the instructor's manuscript. Since we were dealing strictly with combat-operative vehicles, no consideration was given to the deep-water fording which encompasses the use of fording kits and special preparations.

be made concerning both natural and man-made waterways, to which may be applied the several means of selection of possible ford sites.

First, in considering man-made channels, the following characteristics are generally true: (1) They are straight (2) They are of uniform depth (3) The banks are uniform and steep to vertical, depending upon the type of erosion control which is established, i.e., masonry, loose rock, retaining walls, brush mats, and so forth. Usually a man-made channel will be narrower, deeper, and have swifter current than natural channels, except those leading to millwheels, which will be slow near the mill.

Natural streams are not uniform in any of the above aspects, and thus are distinguished from man-made channels. Many natural streams which pass through populated areas have been improved, and may exhibit one or more characteristics of man-made streams. On the map, the natural channel will be distinguished by its irregular course which is very closely related to the surrounding relief pattern. They are, of course, much more common than man-made streams, and therefore are of greater interest in selection of fords.

Natural streams vary in size from mere trickles to the biggest rivers. Most are shown on topographic maps, including intermittent streams which are not full the year round. The types of banks and bottoms of streams depend on the ground they are passing through. The vegetation of the banks and bottoms depends on the climate and local conditions. The amount of water in all streams is seasonal and depends upon the amount of water precipitated and running off the hills.

Streams draining hilly country are usually fast-running, with low, steep banks and rocky bottoms. These tend to run to numbers of small streams rather than few large ones. Many run in narrow V-shaped valleys, and many run directly through the woods. On reaching relatively level ground, the small streams join to form larger, slower streams. In the lower ends of the mountain valleys the streams will still have considerable velocity, and stream beds will usually be gravelly, but the surrounding land is wet and boggy, due to percolating water, which has seeped down from the hills. Few roads run across the streams

at these places, the roads tending to follow the streams along the sides of valleys rather than across them.

Upon reaching the floors of the major valleys, the streams slow up and deposit silt. Most of the flat land along the larger valley bottoms is silt which was laid down by the streams during the preceding centuries. Here will be found muddy bottoms, the mud being inversely proportional to the speed of the water, and directly proportional to sloughing off of the banks. More bank growth can be expected in warmer valleys. Where the fall is moderate, the streams start to meander, and develop steep, high banks. Where the stream banks are low and the stream not yet large, a braided channel often develops in which the stream actually flows through many intertwining channels, which keep the valley floor wet the year round. In most braided channel areas the water is fast moving and brushy banks are common. Where the stream passes from the braided channel, swift stage, into the broad winding channel, the real change from stream to river takes place. This, however, is not true of rivers which flow at some elevation, through rugged, mountainous country, for they often become large very rapidly, and flow swiftly over rock bottoms for much of their length.

In examining a river channel, such things as difference in bank height and slope, depth, speed, bottom composition, brushiness, and approaches affect the selection of fords. Where the stream meanders, the current is slow and the water fairly deep. The banks will, in many cases, be high, of clay or silt, and very steep. Cutting away of the soft banks by the water leads to caving or sloughing off of the banks leaving a sharp upper rim on the bank and a pile of mud at the water line. This pile of mud will extend into the water, and create a very muddy condition near the banks. The center of the channel will be the deepest place, in this case.

Where rivers curve, the banks will not have similar characteristics. On the inside of the curve the bank will be lower and sloping, the more gentle slant extending down into the stream bottom. On the outside of the curve the bank will be vertical or very steep. This is caused by erosion of the banks at the water line, by im-

pact of the water, subsequent caving of the bank, and piling of the earth at and under the water line. In this case the deepest part of the stream will be about two-fifths of the way from the higher bank. The pile of mud under the steep bank is a real obstacle to the exit of vehicles from that side, as in the steep bank itself. Usually the sloping inside bank will have higher gravel content than the steep outside. Vehicles can enter streams over the high bank, and exit from the lower bank. This indicates that in selection of possible ford sites, look for fairly broad curves, the outside of which are in the direction from which the troops will enter the ford.

Rapids or ripples in the water indicate shallow spots, and will usually have a more rocky or gravelly bottom composition. The faster water running in these places does not deposit silt as slow moving water does, resulting in the firmer bottom. Also where rivers skirt hills, particularly along the inside of a curve in the hill, rocky bottoms will be found, in many cases the rock being of such size as to prevent vehicles crossing. This is due to the cutting away of the hill by the stream which allows large chunks of the rock which makes up the hill to fall into the stream. Until these rocks are eroded by water action and rolled downstream, they remain on the bottom as obstacles to crossing. In most cases there will not be sufficient room to allow approach to the stream except from the low side. In extreme cases it may be possible to enter the stream from the hillside directly and exit the low side, if the hillside is not too steep.

Smaller streams are more likely to have rocky bottoms than are rivers. They usually run faster, twist and turn a great deal, and have not yet reached the stage where they occupy flat-floored, open valleys. The scrub bank growth will often be thicker along these streams, as the bank erosion is less than the rivers, and there has been more of a thicket built up. The banks, often grassy down to the water's edge, are rounding as the water is approached, and then drop sharply. While these banks are not high, their abrupt sharpness will cause trouble to wheeled vehicles.

Weeds, grasses, moss, and reeds grow in stream bottoms at various

places, depending on the speed of the current, the composition of the bottom, and the climate through which the stream section flows. In the swifter mountain streams, moss and lichens are the main bottom growth, with some grass near the banks. As the streams slow and develop muddier bottoms, the amount of grasses and underwater weeds increases, nearly choking the channel in some places. This growth is seasonal but much of it remains throughout the year. In the flat areas through which the streams run, reeds and bulrushes grow from the stream bottoms near the banks, being indicative of fairly slow currents. Willows and alders are the most common wood growth along the stream banks.

Characteristics of Fords

The first consideration in a ford is whether or not the water is too deep for the vehicles which must pass through it. Assuming that the water is not too deep, there are certain other considerations which make a ford good or bad. The banks, bottom and approach to a ford are more likely to affect its usability than the water depth, in the majority of streams. Banks must be low enough to permit entry and exit from the water, and solid enough to hold the traffic which will pass across them. A ford may be entered over a steeper, higher bank than the one over which exit will be made. Consideration must also be given to the fact that water will be carried out of the stream, onto the bank, by the vehicles as they cross. Where the first vehicles pass easily, the last may not. The bottom of the ford must be solid enough to bear the traffic as well. The rule on this is, the rockier the bottom, the more it will bear. However, extreme rockiness featuring great boulders is as much an obstacle as a pure mud bottom, and a middle ground must be met. A way to the ford and a way from it must be located if a ford is to be used. Of course, roads are ideal, but any land that can be traversed is usable. Swamps, steep hills, dense woods, ditches, and other obstacles must be avoided.

The ideal ford, then, is a shallow place, with the water moving slowly, approached from both sides by trafficable roads, low, gently sloping banks, passable at the deepest part

by the smallest vehicle in the unit, and with smooth bottom of solid gravel, free from ruts and holes. Due to natural phenomena, this is not likely to be found in all its aspects. If it is, it will be due to some work of man.

When determining a ford's worth, differences in the vehicles which are to use it must be considered. The fording depth of the various vehicles and their ability to get through are different and the ford must be selected for the weakest of the vehicles unless they are to be helped through. For example, a ford which is not usable to a ¼-ton because of depth, is usable to a 2½-ton truck. A ford that has too steep a bank for wheeled vehicles is usable to a tank or other tracked vehicle.

In making a ford selection, consider the platoon as the fording unit and select the ford on the platoon's fording capabilities. Medium tanks can get through any place that a reconnaissance platoon can and many that they cannot. Again, each vehicle may not be required to cross alone and unaided. Tanks can tow jeeps and other vehicles across and trucks may use winches to aid the crossing. Hasty pioneer work can improve fords by cutting down banks and laying brush mats to reinforce bottoms. Application of initiative and work can get a platoon across any reasonable place, but the objective is to select fords which do not delay.

Selection of Fords From Maps

Maps, being graphic representations of the earth's surface, will show streams quite prominently, since they are distinguishing terrain features. They stand out particularly well on those maps which are printed in color. From the usual information which is printed on maps, a good indication as to the likeliest fording spots can be derived.

However, maps have a good many limitations in their employment for the purpose of selecting fords. They cannot be considered as final information sources in selection of fords, one or more of the other means being necessary supplements to the map selection. Of course, selection of fords from maps, aerial photographs or by aerial reconnaissance should all be considered as supplementary or preliminary to selection on the ground

by actually going there. Even then the final proof of the ford is passing the vehicles through it successfully.

While most maps attempt to show the streams graphically as to width, they do not show depth nor do they show condition of the banks. Only in the case of appreciable woods at the water's edge do they show bank growth. Speed of the current and condition of the bottom also are not given in map information. Important items which are shown are the approaches. Roads and swampy areas are shown and this information taken from maps is very useful in making the initial selection, as well as woods and hills which must be considered.

In view of these limitations the map should be approached with caution, and final decisions as to fording not made from them. A possible exception to this is in the case where an existing ford is shown on the map. Usually where a ford is shown it will be usable during normal or lower water levels and may have been improved at some time, to increase its trafficability, by addition of stone or gravel to the banks and bottom.

The scale of a map which should be employed will in many cases be the result of using what is available. Normally the larger the scale of a map, the more detail will be shown on it. Therefore the 1:25,000 scale should tell the most about a stream. The 1:25,000 maps which are issued in Germany at the present time are compiled from older German maps and are quite detailed. However, they are not printed in all colors found on U. S. maps and hence are not as graphic as the U. S. maps. Where the streams are shown in blue they can easily be picked out. In addition, widths are well shown on these maps as well as the many minor streams which are incident to the main streams. Ditching, swamp, relief, and roads, including minor trails, are well shown on the 1:25,000 map. It takes more sheets of this scale to cover a section of stream than of smaller scales, involving a problem of storage, issue, transportation, and use.

The next most detailed scale of maps which are available at present are the 1:50,000's. These are printed, in most cases, in five colors, and show quite well the stream channels and other details mentioned above, including the swamps and minor

streams and some ditching along the main streams. Widths of the streams are also shown graphically but an actual measurement of a stream width from a map would not be accurate, the width shown being largely relative rather than to scale. Considerable detail as to positioning of the stream is found on this scale map, multiple channels and mill diversion channels showing up quite well.

In the 1:100,000 map, a great deal of detail is lost in the saving of space and diminishing size of ground objects. However the up-to-date maps of this scale are accurate as to positioning of the streams and will show where the main stream runs in multiple channels. Most of the incidental streams which are not in themselves main streams will not be shown, nor will ditching and such minor drainage works usually appear, unless it amounts to a considerable project. Estimation of stream widths from the map is of low accuracy on the 1:100,000, since in order to show up well on the map, a blue line of some width must be printed and many streams will appear wider on the map than they actually are on the ground. This is also true of the 1:50,000 maps.

In making the initial selection from the map, scan the stream line, noting unusual features, multiple channels, meandering stream sections, swampy areas, approach roads, woods and relief. Reject as having unsuitable ap-

proaches places where the stream runs along a steep hillside and through swampy areas. Where the stream runs in a braided multiple channel, the ground will be wet and soft, and should be avoided. Where the stream meanders, leaving old channel sections and oxbow lakes, the banks will be steep and high, so reject these places. Select places where the stream runs straight, in one channel, and where it is not backed up behind a mill dam. These should be the most likely places for fords. Next select places where the outside bank of a curve can be approached; and third, where the stream runs in two channels, separated by some distance.

Once the initial map selection has been made, time should be spent in applying one or more of the other methods of ford selection, all of which should lead to a ground check. This is the only conclusive way of making a ford selection, and proof of the ford lies only in placing it into use.

Selection of Fords From Aerial Photographs

Aerial photographs offer several advantages over maps in the initial selection of fords. They are: (1) large scale. Most aerial photographs issued for tactical use are around 1:10,000 scale, which is large enough to show considerable ground detail. (2) Recency. It is usually possible to obtain photographic coverage which is much

more recent than the latest map revisions. In operations, photography is available within 72 hours after it is flown. (3) Detail. Being an actual picture of the ground, photographs show the terrain as it actually is. Even to a person not especially trained in the interpretation of aerial photographs, large scale photography will graphically give a wealth of information concerning the terrain. To a trained photo interpreter, measurements of surprising accuracy may be made of objects and features on the ground, including height and slope of stream banks and stream widths; probable shallow spots are discernible. The surrounding road and trail net is well shown on air photos and trafficability of the soils is indicated.

To select a ford from aerial photographs, the first requisite is recent coverage of appropriate scale, 1:10,000 or larger, taken at a time when water levels are normal, or the same as they will be at the time when fording is undertaken. Lay up a loose strip mosaic of the stream coverage, and by scanning, select likely looking spots for fords. Look for spots where the river abruptly widens for short distances, with light patches on the banks. These are existing fords which are also indicated by roads leading away from the banks directly opposite each other with no bridge over the stream.

Closely examine the ford sites selected, looking for all the requisites. To the naked eye, sloping banks, steep banks, high banks, back-up from mill dams, multiple channels, bogs and swamps and the approaches to the fords are all quite discernible. Large, dark patches on the approach fields are wet. If it is possible to use stereo vision or magnification, so much the better; a great deal more can be learned by applying them but they are not a vital necessity.

Shadows will indicate trees and brush lines. A line of shadow on the water will give a clue to the height of the bank. A thin hard line at the stream edge indicates steep banks. A broader white bank line with a sharp upper edge indicates steep clay banks which are sloughing off into the water. If the stream meanders through this type bank, the banks are probably high. This type of bank is also found on the outside of curves in areas where the stream flows through



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An M47 emerges over a medium steep bank. Later tanks would hit more mud.

flat valley floors. A very soft line or simple change in tone from the water to the land indicates low rounding banks.

Selection of Fords By Aerial Reconnaissance

Selection of fording sites from liaison aircraft is effective and practical. It offers the advantage of covering great distances in the shortest possible time, plus giving the observer a wide view of the ford and its surrounding area. Present-day light aircraft also have the capability of flying low and slowly enough that a fair amount of detail may be seen. Disadvantages of this method are the weather limitations on flying the airplane and upon visibility in general. Also the speed of the aircraft and the distance it must remain above the ground limit the accuracy of observation.

In making an aerial reconnaissance for a ford the first step is to make a map reconnaissance of the sector to be covered, planning the flight in sufficient detail that time is not wasted in flying aimlessly around in getting oriented. From the map it is possible to select areas which are more likely to be fordable than others, or at least to eliminate those sections where fording is probably not possible. This stage of the planned reconnaissance should be worked out with the pilot, who will give valuable assistance in planning the flight.

For this use the 1:50,000 map is very good in that it shows considerable ground detail. If the flight is to cover much territory this map is less satisfactory because so many sheets are needed and handling a lot of maps inside an airplane in flight is frustrating. Therefore a map reconnaissance from a 1:50,000 or larger scale and use of a 1:100,000 map in the airplane is a good solution to the problem.

Fly along the selected streams, off to one side, at about 200-300 foot altitudes, marking likely looking fords on the map at the first pass over. Double back and "drag" the previously selected locations. This consists of flying low and slowly circling the ford, scrutinizing it carefully, noting all the details of the approaches, banks, speed of the water flow and the depth. It is quite possible to estimate the depth of the water since

the observer is directly over it and can tell by the clarity with which the bottom may be seen, the relative depth of the water. For this purpose it is best that the flight be made in the middle of the day when the sun is highest and the light penetrates the water to the maximum.

Certain fords, first selected, will be eliminated by this closer inspection from low altitude, and the remainder confirmed. Before leaving the area it is a good idea to fly higher and evaluate the surrounding terrain. Especially important is the relationship of the ford to the existing road net as shown on the map. Certain fords may be set aside as being too isolated to be of immediate importance. On the other hand new roads and usable trails which do not show on the map may be discovered near the fords and this is useful as terrain information in any case.

This type of deliberate reconnaissance is usually feasible only when there is time to carry it out. In operations, selection of fords for use by friendly troops is controlled by the unit's position on the ground and by the time at which they will need to use the ford. Because of the capability of the platoon to communicate directly with the airplane it is possible for the platoon leader to request an advance reconnaissance for a ford site and be directed to it from the air. In this case the platoon making the request must advise the pilot or observer of the approximate locality in which he expects to reach the river line, and the time. The pilot can then drag the river and report fording possibilities to the platoon. Existing fords are readily discernible from the air, even at altitudes over 1000 feet, if visibility is good.

Selection of Fords By Ground Reconnaissance

In selection of fords by ground reconnaissance, the slowest and surest method is employed. Where aerial reconnaissance can cover miles while ground reconnaissance is covering yards, and aerial photography can place a picture of the ground in the hands of the reconnaissance leader, neither of them can provide the close look at the ground that actually being there affords.

Again the first step is a map reconnaissance. This will save time by lim-

iting the search to areas of probability. If no fords are found where anticipated from map study, then the areas first rejected must be checked, for as stated above, a map is not a final authority in making ford selections.

In evaluating streams for fordability, the presence of diversion channels for millwheels and dams which back up water behind the mill are important features, since the stream is wider, deeper and will have a muddier bottom behind the dam where the water is relatively still. In addition, the diversion canal is usually deliberately dug and features a deep narrow channel with steep banks. It is usually harder to cross these short canals than the stream proper because of these characteristics, and in any case they should be avoided since they require two crossings instead of one. On the other hand, where the main stream is too deep to cross, splitting the water into two channels may divide it in such a way that they may be crossed individually.

If possible approach the stream from high ground. This gives an overhead view of the stream and approaches. From the point of vantage, select the most likely looking spots for fords. Look for rapids and ripples, as this denotes shallow spots. Look for low banks, clear of brush, and for a way to approach and leave the stream. Note also the presence of trees to be used as holdfasts in case winching is necessary and for materials to be used in hasty pioneer work if it is necessary to improve the ford.

If there is no point of vantage from which a view of the ford may be obtained then move directly to the river line and proceed along the banks in so far as possible. As the likely looking spots are located, examine each carefully, noting the water depth, flow, character of the banks and bottom. If possible test the ford by actually driving through it before sending the troops across. Ascertain whether the banks and bottom will bear all the vehicles which will pass over them, as well as whether the approaches will bear the traffic. Select the best ford and one or two alternate fords. Keep in mind and estimate the effects of an unexpected rise in water level if one should occur.

To be concluded

NEWS NOTES

Armored Division Association Conventions for 1953 Announced

Many requests for publicity announcements regarding various Armored Division Association conventions for 1953 have been received. So far, the following announcements are firm and are published herewith for information of former or present members of the various Armored Divisions:

The First Armored Division Association meets at the Shoreham Hotel, Washington, D. C., 28-30 August. For further information contact the Association at 1529-18th St., N.W., Washington, D. C.

The Third Armored Division Association will convene at Milwaukee, Wisconsin, at the Hotel Schroeder, during the period of 23-25 July. For details contact the Association at 80 Federal Street, Boston 10, Massachusetts.

The Fourth Armored Division Association will hold its 7th annual reunion at the Bellevue-Stratford Hotel, Philadelphia, Pennsylvania, during the period of 18-20 June. For further information contact the Fourth Armored Division Association, P. O. Box 247, Madison Square Station, New York 10, New York.

The Eighth Armored Division Association will convene at the Bellevue-Stratford Hotel, Philadelphia, Pennsylvania, during 3-5 July. Details may be obtained by writing the Association President, Mr. Henry B. Rothenberg, Room 1008, 33 North LaSalle Street, Chicago 2, Illinois.

The Tenth Armored Division Association will hold their annual roundup at the Hotel Washington, Washington,

D. C., 22-24 May. For further information you may write to Mr. Sidney Charik, 1511-20th Street, N.W., Washington 6, D. C.

A New Tank Recovery Vehicle

Production of a new tank recovery vehicle is planned for the Chrysler Detroit Tank Plant as soon as engineering work has been completed. Mr. Thomas F. Marrow, Works Manager of the Chrysler Detroit Tank Plant, said details of the new tanklike vehicle were classified, but that Chrysler's Central Engineering Division had been assigned the engineering project by the U. S. Ordnance Corps.

Mr. Marrow said the Chrysler Detroit Tank Plant with the new field service and development work and a contemplated tank modification program will remain "the nucleus of tank manufacturing 'know-how' for years to come."

Chrysler Corporation took over, at the request of the Ordnance Corps, the manufacturing and assembly operations at the Detroit Tank Plant last July.

"The Chrysler Detroit Tank Plant has successfully put into effect the stretch-out program that it was given in early December by the Ordnance Corps," Mr. Marrow said.

He added that the stretch-out was accomplished with no decrease in personnel because of the added responsibilities the Ordnance Corps had assigned to the plant.

Mr. Marrow said total tank production was classified, but did disclose that more than 27,000 tanks had been built or modified by Chrysler during World War II and the present emergency.

Chrysler Breaks Ground for New Tank Plant

Ground was broken recently for construction of a \$3,100,000 government-owned plant which the Department of the Army had previously announced would be built and operated by Chrysler Corporation for modification and final processing of military tanks for Army Ordnance.

The new plant, which has been designated by Chrysler as the Corporation's Delaware Tank Depot, will be located on an 87-acre site directly adjoining the manufacturing operations of the Chrysler Delaware Tank Plant, at Newark, Delaware and will function as an integral part of that facility.

Officials of the U. S. Army Ordnance Corps in Washington, Philadelphia and Detroit joined Mr. Robert T. Keller, General Manager of Chrysler Corporation's Tank Operations, and Joseph F. Kerrigan, Works Manager of the Chrysler Delaware Tank Plant, in the ground breaking ceremonies.

Construction of the Chrysler Delaware Tank Plant was begun two years ago and it is now producing, in volume, the Army's newest medium tank, the Patton 48. It has been revealed that in the near future the plant will begin production of the Army's first production type heavy tank, the T-43. This new Chrysler-built heavy tank, mounting a 120-millimeter gun, has been called the U. S. counterpart of Russia's Joseph Stalin III, of 57 tons.

The Army stated that the new plant would be used to "incorporate new engineering developments which may be applicable to tanks that have already been built. In the new facility, tanks made by Chrysler will also be processed for direct shipment to the field so that they arrive ready for Army service."

It is anticipated that the new plant, measuring 400 x 380 feet and thus providing 152,000 sq. ft. of floor space, will be in operation late this year. It is estimated that eventually approximately 400 persons may be employed there.

Uncle Sam Saves Money

A saving of more than \$620,000 for the United States Government, through new lower prices on vision blocks for tanks, as a result of improved manufacturing techniques and economy in manufacture was announced recently by Libbey-Owens-Ford Glass Company.

G. P. MacNichol, Jr., executive vice president, in announcing the new prices said it had been the policy of the company, developed during World War II, to initiate voluntary reduction of prices



Wide World
Gerd Von Rundstedt (1952)
Germany's former Field Marshal dies.



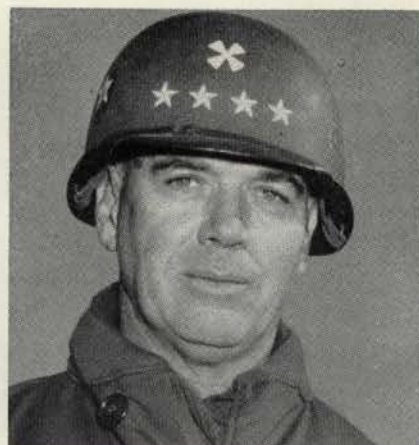
Wide World
Marshal Vassily Sokolovsky
New Soviet Chief of Staff



U.S. Army
Lt. Gen. Manton S. Eddy
To retirement



U.S. Army
Lt. Gen. Charles L. Bolte
To Commander-in-Chief, USAREUR



U.S. Army
Gen. James A. Van Fleet
Back from Korea

on defense products whenever cost reductions justified them.

"We have tried to keep prices to the government, as to other customers, just and fair," said Mr. MacNichol.

Vision blocks are a special product of several thicknesses of plate glass laminated together and so shaped as to give a prism effect, so as to protect tank personnel when looking out of a closed tank when in action.

Twelve customers with shops and arsenals located in nine states have received these voluntary price reductions.

Our Allies are Spread Far and Wide

Nearly all combatant units of the British Regular Army are serving overseas. Two-thirds of the married personnel in the Army are separated from their families by this service abroad.

"Never before in peacetime has there been such a high proportion of the British Army overseas," said Britain's War Minister, Mr. Anthony Head, recently. "Of the 20,000 men now in the British Commonwealth Division in Korea, some 10,000 are from the United Kingdom." In addition a British fleet and a small number of R.A.F. units are serving in Korean waters.

A considerable proportion of the Army is serving in the Far East under active service or near active service conditions. There are 25,000 soldiers fighting the Communists in the jungles of Malay, and another 11,000 guarding the strategic base of Hong Kong.

Out of the 11½-division strength of the Army, five divisions are serving on the continent of Europe. The island of Britain itself has almost been denuded of trained troops. Plans for the coming months are that 334,300 men shall serve in Europe, including the United Kingdom, and 200,300 in garrisons outside Europe. Britain is responsible for guarding 19 centers throughout the

world, such as Gibraltar, Malta and Suez.

Regarding efficiency "things are tough, and getting tougher," said Mr. Head in the same statement. "But so are we."

The British Army today is at a peacetime high level in fire power, trained manpower and new inventions. Latest developments include a recoilless antitank gun to replace the old 17-pounder. This is described by Mr. Head as "probably the most powerful in the world." A tiny but effective 21-oz. antitank grenade, which can be fired from the standard service rifle, has also been developed for the foot soldier. Its destructive capacity is equal to that of the most powerful infantry antitank gun used in World War II.

During the coming financial year, Britain will step up her spending on research for the Armed Forces by 40% to 100 million pounds sterling. Research will center on new weapons such as guided missiles, aircraft catapults, new types of aircraft. This sum does not include atomic research.

The application of atomic weapons to land-air battle is one of the chief problems now engaging the attention of the British Army, according to Sir John Harding, Chief of the Imperial General Staff. An exercise will be held at Camberley Staff College this summer to study this and other military questions.

The British Army in Germany has several teams of atomic experts advising it on atomic warfare, General Sir Richard Gale, Commander-in-Chief of the Rhine Army, disclosed recently. (Last October Britain exploded her first atom weapon.)

The new crescent-winged Vulcan jet-bomber is designed to carry the atom bomb. Atom-propelled submarines are now in the experimental stage, and plans for a prototype atomic pile suitable for marine propulsion are well-advanced.

On March 31, 1953, General James A. Van Fleet retired from the Army, completing almost 38 years of exceptionally distinguished commissioned service. Graduating from West Point in 1915, he was commissioned in the Infantry. In World War I he went to France with the 6th Division and soon assumed command of the 17th Machine Gun Battalion. Between World Wars he attended the usual military schools and served as instructor at several colleges. In addition to his military duties, he became head football coach at the University of Florida. At the start of World War II, General Van Fleet commanded the 8th Infantry regiment, taking this unit to the ETO in January, 1944, spearheading the landing of the 4th Infantry Division on Utah Beach on D-day. General Van Fleet became Assistant Division Commander of the 2d Infantry Division, Division Commander of the 4th Infantry Division, later transferred to the 90th Division. He was appointed Corps Commander of the XXIII Corps and later transferred to the III Corps where he commanded the breakout from the Remagen bridgehead. His key assignments after World War II were Director of Joint U. S. Military Advisory and Planning Group to Greece; Commanding General, Second Army; and his last assignment, Commanding General, Eighth Army. A recipient of three purple hearts, he has been fondly called by those who served under him, "A fighting general." Upon the eve of his retirement, at a West Point anniversary dinner in New York, General Van Fleet, the most recently returned senior commander from the Korean battlefield, decried the system which necessitates the sending of inexperienced junior officers to the battlefield. At the same time he lauded the value of the battle hardened non-commissioned officers.

Official ceremonies were tendered General Van Fleet at Ft. McNair, Washington, D. C., on the last day of March.



These Sherman tanks attract everyone's attention as they rumble through a suburb of Tokyo. The new tanks are being used in training by Japan's National Safety Corps which has a strength equivalent to several Army Divisions.

United Press

Korean Campaigns

General Orders No. 93, 22 October 1952, named the following Korean Operations in the list of battles and campaigns of the United States Army: (All combat zones are the territorial limits of Korea and adjacent waters)

1. UN defensive—27 June to 15 Sep. 1950 incl.
2. UN offensive—16 Sep. to 2 Nov. 1950 incl.
3. CCF intervention—3 Nov. 1950 to 24 Jan. 1951 incl.
4. First UN counter offensive—25 Jan. to 21 April, 1951.
5. CCF spring offensive—22 April to 8 July 1951 incl.
6. UN summer-fall offensive—9 July to 27 Nov. 51 incl.
7. Second Korean winter—28 Nov. 51 to 30 April 52 incl.
8. Korea summer-fall 1952—1 May to 30 Nov. 52 incl.

Washington Chapter of U. S. Armor Association Meets

A get-together of officers assigned in the Washington area interested in Armor and mobile warfare has been planned at the Fort McNair Officers' Club for the 17th of April, 1953. The meeting will open with dinner at 7 P.M. and the evening program will feature several speakers who are exponents in the Armor field. The total cost will be approximately \$4.50 and it is estimated that more than a hundred officers will turn out for the occasion. Officers who are interested may make further inquiry by telephoning Captain C. R. McFadden, Jackson 7-9400, extension 409.

Stress the Fundamentals!

Major General Bruce C. Clarke, commanding general of the 1st Armored Division and Fort Hood, and Lieutenant Colonel M. G. Roseborough, former chief of staff of the 1st Armored Division, returned recently from a month long trip to Japan and Korea. The purpose of the trip was to observe units in action and conditions in Korea with

a view to improving the training of individuals destined for duty in that theater.

In traveling the front lines from coast to coast and the rear areas from Pusan to the front lines, they conferred with commanders at all levels and talked to the men in the trenches and bunkers on the front lines and in the training, supply and support installations in the rear areas. Included among these were many officers and men who were former members of the 1st Armored Division at Fort Hood.

The answers to questions regarding the improvement of stateside training added up to an increased emphasis on basic fundamentals such as driving, shooting, maintenance, map reading, scouting and patrolling, field fortifications, field sanitation and first aid, supply economy, camouflage and concealment, and the other basic subjects now included in Army Training Programs in use at Fort Hood and other training divisions. All reported that had they the opportunity to do it over again they would apply themselves even more diligently as students and instructors with a view to being better soldiers and leaders in Korea, for, in the final analysis, it is the poorly trained soldiers who are the most apt to become casualties. It was apparent that thorough training pays big dividends in a shooting war.

New Corps Armor Officer

Major Raymond W. Weeks has been assigned as Corps Armor Officer, G3 Section, with X Corps Headquarters in Korea. This was recently announced by X Corps Headquarters.

NEW AMPHIBIOUS VEHICLE



The Army's new 60-ton BARC, an amphibious cargo vehicle, was unveiled at a recent demonstration at Fort Lawton, Washington. Dwarfing the amphibious DUKW, the BARC can transport heavy items of military equipment, including a medium tank, and put them ashore over a beach, to unload for combat action.

ARMOR—March-April, 1953

Armored Infantry Battalion Organization

by **FIRST LIEUTENANT CHARLES P. NIXON**

IN the postwar period several conferences have been held at several of our service schools and much study has been centered upon the Tables of Organization and Equipment for divisions and their organic units. However, these changes did not materially affect the organization of the Armored Infantry Battalion which I believe has been badly neglected.

The Armored Infantry Battalion operates today on a 1948 Table of Organization and Equipment under which I feel it would be ill prepared to adequately perform its mission in a mobile war.

I would like to analyze the present battalion T/O&E and make some suggestions in line with what I think would be improvements:

The Armored Infantry Battalion has four armored infantry companies and a headquarters and service company. The latter includes battalion headquarters, company headquarters, a headquarters platoon, a supply platoon, a reconnaissance platoon, a mortar platoon, a maintenance platoon, an administrative and personnel section and a counterfire squad.

The armored infantry company includes three rifle platoons of three rifle squads each; a light machine gun squad; and one weapon platoon with three 60mm mortars.

It will be apparent at once that the battalion has no defensive weapons to fight enemy armor other than its rocket launchers, which are comparatively short range weapons.

Since the separate battalion may on occasion be employed without

armor support or in a supporting role with units lacking armor, the need for an effective antitank weapon becomes important.

It is my opinion that the answer lies in a change which will permit the addition of a type of assault gun, or SP, to the existing organization of the battalion; a fast, highly maneuverable tracked vehicle mounting a high velocity gun and with the primary mission of killing tanks.

Do we have such a weapon? The M19A1 mounting the twin 40mm AA guns is too light in armor and armament. The 155mm mounted on the M40 is too heavy. The appropriate thing would be a 90mm SP, using the M19A1 chassis.

A company of four or six of these antitank weapons would be especially useful to the Armored Infantry Battalion attached, as is the case here in Germany, to the Corps light armored cavalry regiment.

Turning now to the battalion mortar platoon, which has three 81mm mortars mounted in half-tracks, although full-track vehicles are said to be forthcoming. . . .

The 81's, with a range of approximately 3000 yards, can hardly be expected to provide supporting fires to a battalion operating on a broad front, as, for example, the separate battalion supporting Corps cavalry. I believe that the substitution of 4.2 mortars in place of the 81's would better accomplish the mission.

To handle the expanded logistical requirement of the suggested organizational additions, the present support of nine 2½-ton trucks with trailers would have to be increased by six.

The battalion maintenance pla-

toon, presently consisting of three 2½-ton trucks, two tank recovery vehicles, one jeep and one wrecker, would be adequate with the addition of two 1-ton trailers to increase space for spare parts.

Looking now at the battalion rifle company, there is a company headquarters, with the usual administrative, mess, supply and maintenance sections. The company has three ¼-ton trucks, two armored carriers with one-ton trailers, and two 2½-ton trucks with trailers. None of these vehicles is free to resupply the company, particularly when it is attached to the light armored regiment operating on security, light combat or reconnaissance missions.

The need here is for an additional 2½-ton truck for the supply section for use on Class III.

In the rifle platoon, of the separate battalion, the rifle platoon leader is without means to carry out reconnaissance, just as the company is. Addition of a jeep to the scout section of the company or to the rifle platoon would permit tactical use similar to the use of the ¼-ton truck in the heavy tank platoon.

Lastly, the mortar platoon has three 60mm mortars organized exactly as is the standard foot infantry unit, with three half-tracks and one jeep. The weapons cannot be fired from the vehicles, which reduces them to the status of transported weapons. Therefore, could they not be replaced with 81's which could be fired from the vehicle and would have correspondingly greater range and effect?

Incorporation of these changes would, in my estimation, greatly increase the effectiveness of the Armored Infantry Battalion over its present operation.

FIRST LIEUTENANT CHARLES P. NIXON is a member of the 370th Armored Infantry Battalion, U. S. Seventh Army in Europe.

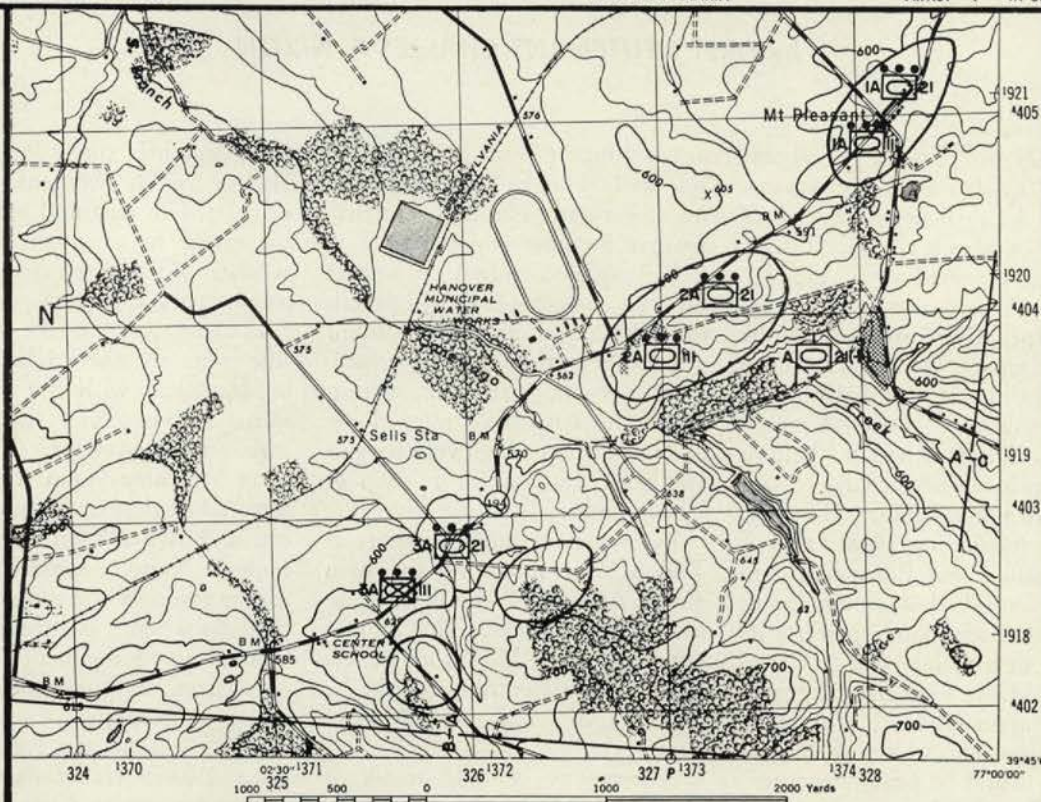
WHAT WOULD YOU DO?

Reinforced Tank Platoon in the Mobile Defense

AN ARMORED SCHOOL PRESENTATION

AUTHORS: MAJ. V. J. FENILI MAJ. J. A. RANKIN

ARTIST: M. SGT. W. M. CONN



SITUATION:

THE 21ST M TK BN (REINF), PART OF CCA, 301ST ARMD DIV, HAS BEEN ATTACKING NORTH TO SEIZE AN IMPORTANT ENEMY COMMUNICATIONS CENTER. BECAUSE OF A LARGE-SCALE ENEMY COUNTERATTACK ELSEWHERE ALONG THE FRONT, THE 301ST ARMD DIV HAS BEEN ORDERED TO HALT AND DEFEND GENERALLY ALONG LINE HIGHWAY 194. WITH THIS EXTENDED FRONT, THE DIVISION COMMANDER REALIZES HE MUST EMPLOY MOBILE DEFENSIVE TACTICS. THE 21ST M TK BN (REINF) HAS BEEN ASSIGNED A PORTION OF CCA'S SECTOR OF THE OUTPOST SYSTEM. CO A, 21ST M TK BN (REINF) HAS BEEN ASSIGNED THE SECTOR SHOWN ON THE SITUATION MAP. YOU ARE PLATOON LEADER 2D PLAT, CO A, WHICH HAS BEEN REINFORCED WITH 2D PLAT, CO A, 111TH ARMD INF BN. YOUR COMPANY COMMANDER HAS POINTED OUT YOUR REINFORCED PLATOON STRONG POINT ON THE MAP AND ON THE GROUND. HE HAS ORDERED YOU TO ORGANIZE THE STRONG POINT FOR THE DEFENSE.

YOU AND THE ARMORED INFANTRY PLATOON LEADER AND THE PLATOON SERGEANTS STUDY THE TERRAIN—ON BOTH THE MAP AND THE GROUND—FORWARD OF THE PLATOON POSITION.

THERE ARE THREE LIKELY AVENUES OF ENEMY APPROACH TO THIS POSITION. WE'LL HAVE TO PAY PARTICULAR ATTENTION TO THE WOODED AREAS ALONG SOUTH BRANCH CONEWAGO CREEK.



A STUDY OF THE TERRAIN SHOWS PLENTY OF COVER, BUT LITTLE CONCEALMENT. USING WHAT CONCEALMENT IS AVAILABLE, YOU START PLACING YOUR TANKS COVERING ENEMY AVENUES OF APPROACH FROM THE LEFT AND LEFT FRONT.

I WILL LOCATE TANK NUMBER TWO IN THE LARGER ORCHARD AND TANK NUMBER THREE IN THE SMALL ORCHARD.



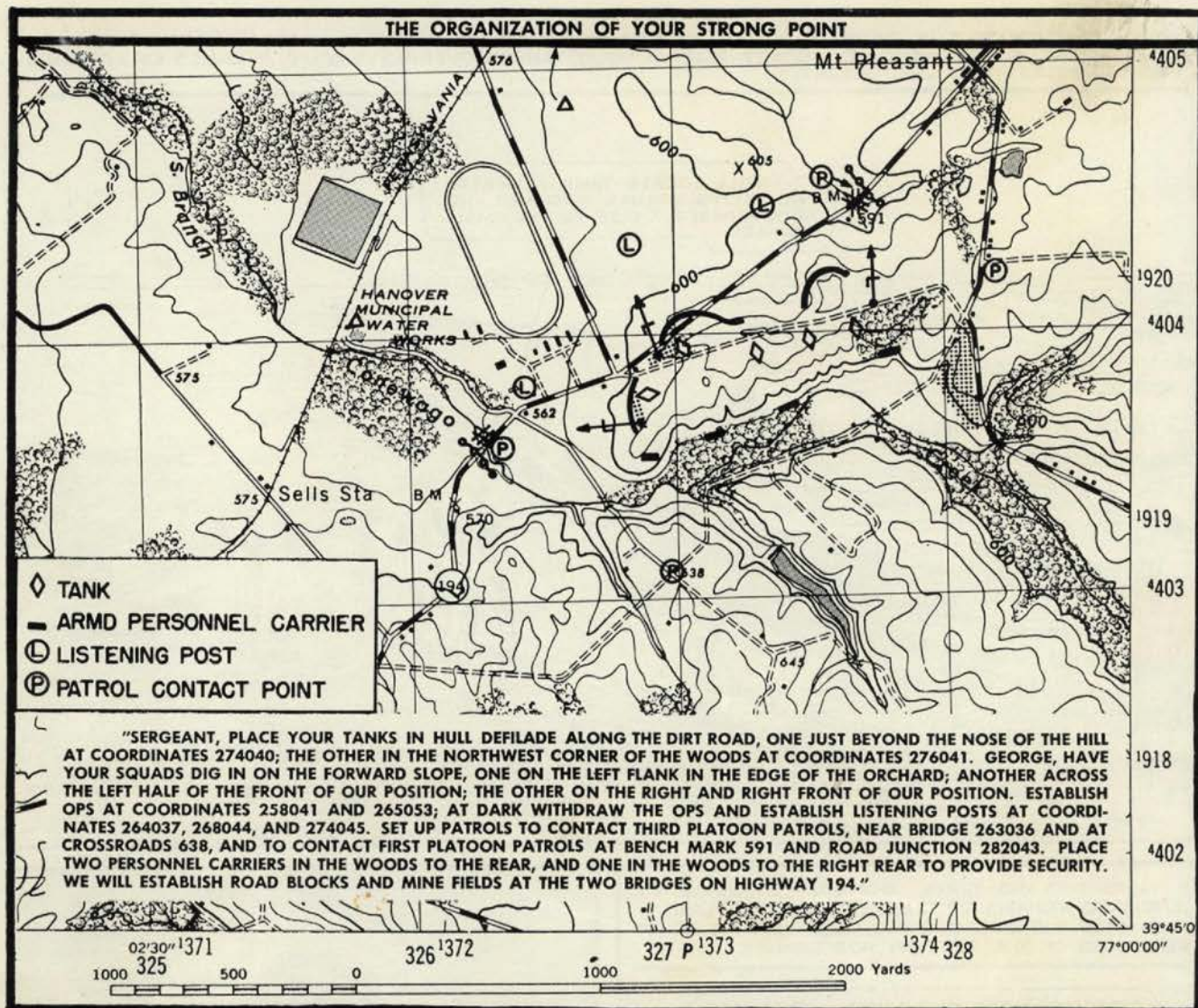
TANKS TWO AND THREE LOCATED, YOU COMPLETE AUTOMATIC WEAPONS COVERAGE OF THE LEFT FLANK AND ISSUE INSTRUCTIONS FOR ORGANIZATION OF THE REMAINDER OF THE PLATOON POSITION.

SERGEANT, PLACE YOUR TANKS... (?) GEORGE (*armored infantry platoon leader*), PLACE AN ARMORED PERSONNEL CARRIER IN HULL DEFILADE ON THE LEFT FLANK SO THAT ITS MOUNTED MACHINE GUN CAN BE MANNED BY THE DRIVER. HAVE YOUR SQUADS DIG IN... (?) ESTABLISH OPS AT... (?) SET UP PATROLS TO CONTACT THE FIRST AND THIRD PLATOONS AT... (?) PLACE YOUR OTHER PERSONNEL CARRIERS... (?) WE WILL ESTABLISH ROAD BLOCKS AND PLACE MINE FIELDS AT... (?)



WHAT
WOULD YOU DO

SEE NEXT PAGE
FOR SOLUTION



DISCUSSION

Strong points in the mobile defense are organized on critical terrain features which dominate likely avenues of enemy approach into the defended area. The mission of units at strong points is to deceive the enemy, to slow him down, to force him to deploy, and, if possible, to stop or destroy him. Tanks and automatic weapons are placed on the position so as to provide a maximum volume of fire covering enemy avenues of approach. Personnel carriers, because of their vehicular machine guns, may be used in organizing the position; otherwise they are assembled in a covered position within the strong point. Range cards are prepared for each position. Road blocks and mine fields are established and covered by tank and small-arms fire. These obstacles should be located so that they do not hinder the counterattack by the reserve. Advantage is taken of all natural obstacles to delay, slow down, and harass the enemy. Observation posts are established during daylight hours, and listening posts at night when observation posts are pulled in. Contact between strong points is maintained primarily by radio. However, patrols are usually operated between strong points during hours of darkness, and are used during daylight to safeguard areas covered neither by the strong points, nor by observation. At night, or when visibility is limited, tanks and automatic weapons should be sited to fire down roads or similar likely avenues of approach in order to ensure hits on approaching enemy vehicles and personnel. Armored infantry normally will dig in along forward slopes of strong-point positions.

*A panzer expert discusses German antitank experience
on the Russian front during the period 1941 to 1945*

Antitank Defense

by **HERMANN BURKHART MUELLER-HILLEBRAND**

IN 1941, the Soviets introduced tanks into combat, which were an unpleasant surprise for the Germans both in quantity and quality. The German Army was forced to adapt its own weapons and combat methods to its opponent. Therefore it appears to the author as a fortunate coincidence that two articles appeared in the November-December 1952 issue of *ARMOR*. One dealing with the problem of antitank defense "Mobile Antitank Weapons in Armored Warfare" and the other "The Story of Soviet Armor: Assault Guns," an excellent survey, dealing with an important branch of the Soviet Armored Force: the Assault Guns. According to this article it is to be expected that the

U. S. S. R. will pose serious antitank defense problems to its foes in a future war as it did in the last one. A new problem will be the fact that now assault guns (Russian: S.U.'s) may be expected in great numbers alongside the well-known tanks. The author of "The Story of Soviet Armor" has stressed the characteristics of these assault guns in his account. It is therefore perhaps of interest to consider the problems which Soviet Armor presented to German antitank defense in the last war.

The belief that the primary mission of the tank is to destroy the enemy machine guns and infantry became qualified in the campaign following 1941. If the enemy infantry is protected by tanks, the primary mission of the friendly tanks is to combat the hostile ones as the most dangerous antagonist of the friendly infantry.

It soon became apparent that the best weapons for combatting Soviet tanks were our own tanks. However, the tank is such an expensive weapon that it can never be produced in such numbers that it can take over the mission of mobile antitank defense. The German Army reserved the tank exclusively for the Armored Divisions (*Panzerdivisionen*), in order to utilize its advantages to the best possible effect. This decision, however, left the question of how to provide the Infantry Divisions with a mobile antitank weapon unresolved, since the relatively immobile antitank guns could not alone resist the swift and aggressive Soviet Armor.

Two different approaches were made to the problem of creating a mobile antitank weapon. One led to a solution similar to that which was recommended in the article "Mobile Antitank Weapons in Armored War-

Hermann Burkhardt Mueller-Hillebrand, former Generalmajor in the German Army, during World War II was Chief of Staff of the German XXXVI Panzer Corps and the Third Panzer Army.



75mm Pak 40 on German-Czech PzKfz 38(T) tank chassis.



German AT gun on Mark III chassis in use by U.S. soldiers.

fare" cited above. The antitank gun (a long-barreled 75mm gun at that time) was placed on a tracked chassis, provided with light armor and named "Antitank Gun on a Self-Propelled Mount" (Pak/Sf1.). In this manner there was created a weapon with an efficient antitank gun, cross-country mobility and protection against shell fragments. It was planned to use them in the following manner. The Pak/Sf1. should be held in readiness to be thrown forward swiftly into previously reconnoitered concealed positions in case of a hostile tank attack. Here they would await the enemy tanks. This Pak/Sf1. was not expensive and could be produced in great numbers comparatively rapidly. Prior to this the Pak/Sf1. had not been regarded as an ideal antitank weapon and therefore a further solution of the problem was sought at the same time.

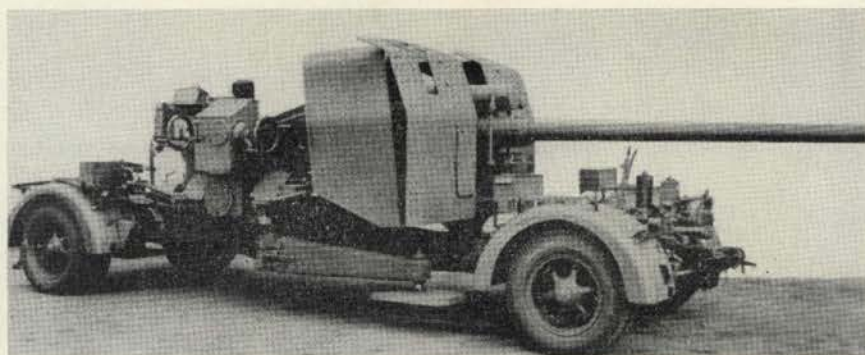
The Pak/Sf1. betrayed, as was expected, weaknesses in tactical employment. These weaknesses were of the high silhouette of the vehicle and its thin armor.

The unavoidable height of the vehicle meant that it often could find no suitable firing position. Furthermore, the Soviet tanks preferred open terrain for their attacks. Consequently, the Pak/Sf1. were often forced to take up firing positions which, despite the attempt to camouflage them carefully, could not be kept hidden from the enemy. They then swiftly fell prey to the hostile tanks or to artillery fire.

Because the Soviet tanks often appeared suddenly and because of their speed as well as their tendency to penetrate the German defensive positions without pauses for fire and observation, it was often impossible for the antitank guns, Pak/Sf1. to reach their carefully reconnoitered positions in time. They were thus forced to take up the battle while they were still on the move. In this situation, however, they were hopelessly inferior to the tank because of their light armor.

The Pak/Sf1. naturally were not in a position to counterattack hostile tanks which had already broken through the German lines.

Even so, the Pak/Sf1. provided an important support for antitank defense in an especially critical time. Because of their above-mentioned



German Flak 40 dual purpose 88mm gun.

faults, though, they went out of production in the course of the war. Their production figures were: 1942—1123; 1943—1375; 1944—441.

As another solution to the creation of a mobile antitank weapon, less expensive than a tank, there was the Assault Gun. The Assault Gun was developed before the war. It was meant to support the infantry in combat, especially in the attack. For this purpose it was equipped with a short-barrelled 75mm gun. It was to support the attack of the infantry by following the infantrymen as closely as possible and silencing enemy heavy infantry weapons with a few individual rounds. For this purpose, the turret was left off and the gun mounted as low as possible on a tank chassis. In this manner this vehicle achieved a significantly lower silhouette than the tank and could use concealment to good advantage. The frontal armor was strong, on the sides it was somewhat weaker than a tank's, since the Assault Gun was not expected to break into the enemy position *in front* of the infantry and was therefore less exposed to flanking fire than the tank. For this reason the turret could be eliminated. The traverse of the gun was very limited. The Assault Gun was lightly armored in the rear and on top so that the crew was fully protected. It had distinguished itself in combat and had come to be, in fact, a sort of infantry support tank.

A Long Gun

When the difficulties concerning antitank defense arose during the campaign against the U. S. S. R., it was natural to give the Assault Gun a long gun instead of a short one and thereby enable it to give battle to the Soviet tanks. As a result of production difficulties, the above mentioned Pak/Sf1., which could be

more swiftly manufactured, was ordered at the same time.

The Assault Gun with the long gun immediately showed itself to be a weapon which was equal to the tank as a defensive weapon. Above all, its low silhouette was extremely useful. This characteristic made the search for positions simple and made it difficult to detect. Indeed, it could often "sneak up" on the enemy tanks. Because of its heavy frontal armor it could engage in combat with the tank on even terms and also meet it in the attack. For this reason the Assault Gun was renamed "Tank-Hunter" (*Jagdpanzer*).

The limited traverse of the gun proved to be a very minor disadvantage since traverse could be accomplished by swinging the entire vehicle.

During the rest of the war mobile antitank defense depended upon the Tank-Hunter. Furthermore, the Tank-Hunter was able to take over the missions originally assigned to the short-barrelled Assault Gun.

The fact that a heavier gun could be mounted on the tank chassis of the Tank-Hunter because of the reduced weight (thinner side and rear armor and elimination of the turret) proved to be a further advantage, as the following comparison indicates:

Chassis	Weapon on Tank	Weapon on Tank-Hunter
III	short 75mm gun	long 75mm gun
V	long 75mm gun	long 88mm gun
VI	long 88mm gun	long 128mm gun

This meant a further reduction of costs and simplification of production. Furthermore, it greatly facilitated the work of the maintenance system since tank and Tank-Hunter could be serviced by the same trained personnel with the same spare parts and maintenance machinery.

In case of need the Assault

Gun/Tank-Hunter could also replace the tank. For example, the author commanded a tank regiment in the Fall of 1943, one half of which consisted of Assault Guns, because of the existing shortage of tanks. In the battles in the Ukraine the Assault Gun proved itself to be the equal of the tank, indeed, often its superior because of its lesser height. Of course, these battles took place in very lightly covered and gently rolling terrain, which normally offered wide observation, so that battle was usually joined at great ranges. In this situation the Assault Gun could, because of its lesser height, often stalk forward to within closer range of the enemy than could the tank. However, as has been noted, in this case the terrain situation was unusual and especially favorable for the employment of the Assault Gun as a tank "substitute."

Despite the fact that the Tank-Hunter had the great advantage of a considerably lower cost than the tank, its production remained below the number required. Nevertheless, the production of the still less expensive Pak/Sf1. was discontinued because of its unfortunate record.

Consequently all that could be done, besides maintaining the highest possible production of Tank-Hunters, was to seek to improve the relatively fixed antitank defense weapons. Moderate success in this direction was achieved by means of an increase in the number and types of hand

carried antitank weapons. Between these hand carried antitank weapons and the mobile antitank weapons a gap was created by the insufficient quantities of available Tank-Hunters. This gap had to be filled by towed antitank guns, which were unsatisfactory weapons because of their size and relative immobility.

Towed Guns

When the towed antitank guns were employed in large numbers and in such a manner that they could not be discovered before opening fire, they remained an effective weapon to the end. Indeed, the Russians stopped some German tank attacks by concentrating their antitank guns into strong antitank-artillery switch positions. A prerequisite for success, however, was that these antitank guns were so emplaced that the enemy only noticed them after he was already within their effective range. Otherwise they would fall victim to the hostile tanks or artillery shortly after opening fire. They could fulfill their mission especially well from reverse-slope positions. However, one must recognize that the effect of the antitank guns will not reach forward to the front lines. Still it always proved to be better to ward off an enemy attack in the depths of the friendly position than to emplace the antitank guns too far forward and have them fall victim to the attacker even before they could take

any effective action against him.

Effective cooperation can be achieved between the relatively immobile towed antitank guns and Tank-Hunters by emplacing the immobile guns in strongly knit groups. Between these groups gaps are left, the size of which is determined by the number of antitank guns available, and the terrain. In this manner the hostile tank attack would be delayed or at least channelized so that time would be won and favorable conditions created for the commitment of the Tank-Hunters.

The principle that a unit defending against tanks must not withdraw but must remain steadfastly in place, which was insisted upon in the article "Mobile Antitank Weapons in Armored Warfare," was also a basic principle in the German Army. The German Army had the following motto for the Infantry during tank attacks: "Whoever runs, dies." Under no circumstances may the Artillery leave their positions during the defense, even in case of danger that the guns may be lost. The withdrawal of the guns robs the infantry of its moral support in the crisis of the battle. Batteries which held were often a prop for the infantry in desperate situations and, fighting in the front lines, prevented the collapse of the defense. Usually they could then be withdrawn during the night.

When the basic principle that the infantry shall under no conditions withdraw in defense against enemy tanks is recognized, then the use of towed antitank guns is highly significant, assuming that one does not use them singly but in "packs" and that they are not emplaced within view of the enemy's departure position.

Nonetheless, towed antitank guns remain only a stopgap between the hand carried antitank weapons and the insufficient numbers of mobile antitank weapons.

In short, the conclusion is that the Tank-Hunter distinguished itself as the backbone of the German mobile antitank defense in the campaigns of 1941-1945 against the U. S. S. R. The Pak/Sf1., which was only adopted as the "cheapest" solution of the problem because of the weakened productive power of Germany, failed to meet minimum requirements.



German Panzer Jaeger tank destroyer produced at the Czech Skoda factory.

THE SKYSWEEPER

New Tool for the Antiaircraft Artilleryman

RECENTLY the Department of Defense raised the curtain on a new automatic antiaircraft artillery weapon which is virtually an artillery machine gun. This new weapon, nicknamed the Skysweeper, is the first of its kind to have radar, computer and gun on one carriage. It is likewise the first of its kind to be fully integrated with fire control and fire power. Its capabilities include spotting and tracking with radar at a maximum distance of 15 miles, and aiming and firing the gun automatically at any enemy aircraft flying at near sonic speed at a distance of four miles. In addition, it can be used against moving ground targets. These capabilities can be accomplished regardless of the weather or when the aircraft are invisible. In the event of mass targets, selection can be made by the operator. This mobile unit is towed by a cargo tractor. It can be emplaced and have its radar operating in five minutes regardless of the type of terrain. The unit weighs ten tons and is air transportable. In traveling position it is 25 feet long, eight feet wide, and seven feet high.

The gun is a 75mm antiaircraft with automatic loading and firing features combined. The gun fires high explosive shells, weighing approximately 12½ pounds each, at a rate of 45 rounds per minute. This type of shell armed with a proximity fuse explodes automatically at a predetermined distance from the target. The ammunition is automatically fed and rammed into the gun from two eleven-round magazines by an electrically operated loader rammer. The firing can be controlled remotely by either the radar or computer operators. The



U.S. Army
The skysweeper emplaced, and ready to go into action within a 5 minute period. It has the additional potentiality of employment against enemy ground targets.

counter recoil movement automatically opens the gun breech.

The radar unit is equipped to automatically sweep the entire sky once every 40 seconds, detecting aircraft in its 15-mile radius, and graphically showing as a *blip* on a cathode ray picture tube in the radar control panel. This target information is automatically transmitted to the electro-mechanical computer. The radar unit is in a large console mounted to the left of the gun tube in the front corner of the carriage, surmounted by a *dishpan* antenna. Two picture tubes are visible on the rear side of

the console. One is used for scanning and the other for tracking.

The computer automatically plots the range, speed and course of the approaching target, determining where the gun must point so that when a shell is fired it will hit the target. In other words, the "lead," necessary in firing at a moving target, is automatically built in. The computer is located in a large console mounted to the right of the gun tube in the right front corner of the carriage and automatically feeds future target position data into a power control which translates it into corre-

The Department of Defense has removed the wraps from its newest and largest caliber automatic weapon to be produced to date. Here are the facts and a glimpse at the Army's most recent addition to its arsenal of weapons—a 75mm artillery machine gun—the most effective weapon against low-flying, high-speed aircraft.



U.S. Army
Capabilities include the tracking of enemy targets moving at near sonic speeds up to a distance of 15 miles and target hits up to a maximum range of 4 miles.

sponding gun motion.

The integrated units discussed above are all mounted on a combination chassis and gun mount with 4 wheels. These are removed along with the axles emplacing the gun. Specially designed shock absorbers permit towing over rough ground by a prime mover which is usually the M8 Army cargo tractor. The mount can be emplaced on uneven ground or on a slight slope. A motor-driven hydraulic jack lowers the carriage to the ground. Reversing the jack raises the carriage. A rigid pedestal and 4 retractable outriggers extend

from the mount when the weapon is emplaced.

A target selector which is an auxiliary sighting device is used to direct the gun to more advantageous targets which might have been missed by the gun operators. This selector is considered to be a piece of off mount equipment. Two cables connect the target selector to the mount and the mount to the electrical power source.

Operation is almost entirely automatic. Once a gun is emplaced the radar operator causes a radar scanner to continually rotate. When planes appear on the picture tube the opera-

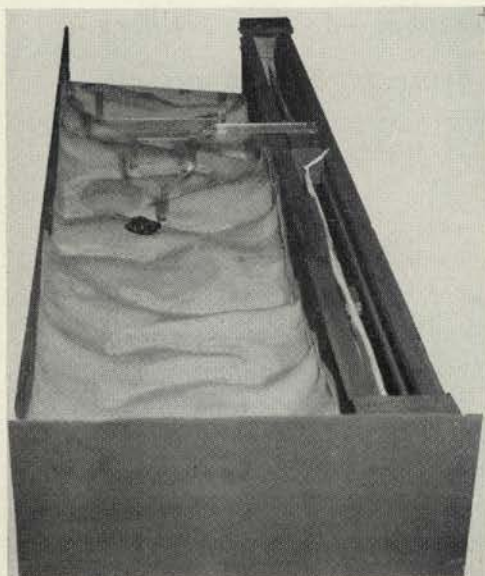
tor depresses a *dead man* foot pedal which stops the rotation of the radar scanner. After making minute adjustments in range, azimuth and elevation, he releases the foot pedal for automatic operation. Automatically the radar tracks the target, feeding data to the computer. The computer plots the future position and aims the gun at this future position. As a target comes within gun range, either the computer or radar operator squeezes the firing trigger and the gun continues to fire automatically.

Due to the complexity of this unit, a 37-week training course for maintenance personnel has been established at the Ordnance School, Aberdeen, Maryland.

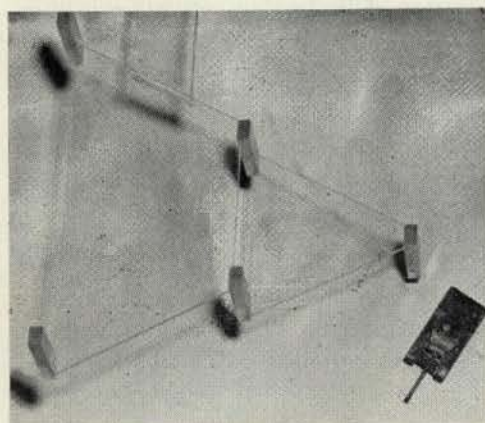
Development and production were commenced by Army Ordnance on this weapon late in World War II. The need for such a weapon was determined by the limitations of the 40mm gun in providing defense against high speed, medium altitude aircraft. Once the military characteristics were determined, Ordnance instituted a complete research, development and production program embodying both American industry and our Ordnance arsenals. Included among these are:

The Watertown Arsenal, which serves as project coordinator and technical supervisor; the Sperry Gyroscope Company; the A. C. Spark Plug Division of General Motors; the Aetna Standard Engineering Company; Franklin Institute; American Machine and Foundry Company; the Wheland Company; National Forge and Ordnance Company; the Cameron Iron Works; and the Frankford, Rock Island and Watervliet Arsenals.

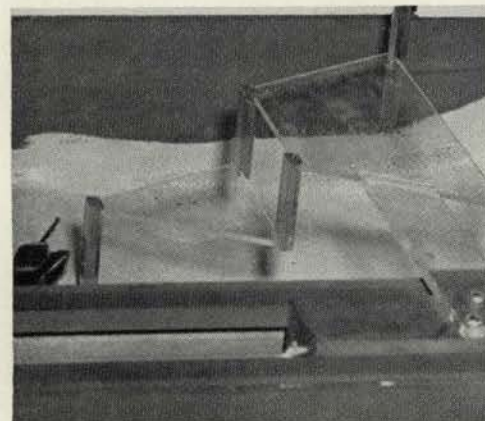
A NEW RANGE FINDER TRAINER



A view of the complete range finder trainer



A close-up of the aid showing its simplicity



The tank model in relation to the reticle

At The Armored School a new Range Finder Trainer has been developed by the Weapons Department and constructed by the training aids shop to meet and minimize the problem in qualifying the average tank gunner in the use of the T41 range finder. This problem became apparent with the issue of M47 tanks to using units.

In the past it was possible to train a gunner in a few weeks, but with the M47 tank it became evident that longer and more intensive training is needed. How is this to be accomplished in the average organization? Tanks may not be available due to other training requirements. A range finder training aid is required. This aid must be simple enough that any tank organization can make it from materials available. It cannot consist of expensive projectors, stereo glasses, etc. It must provide a rapid method of training for the average tank gunner before using the T41 range finder.

The aid shown here is durable, simple, cheap and will enable a group of men to receive instruction and do practical work at the same time. The material cost is approximately \$10.00.

The aid can be modified for use with screen wire terrain covered by paint, as a sand table; or any other way to please the using organization. Targets may be models of tanks, houses, etc., approximately 3" x 1½" x 1". The plastic reticle may be formed of painted tin if plastic is not available. When painting terrain it is recommended keeping the colors light to increase the contrast with the reticle. The aid can be used either with or without binoculars merely by lengthening the control and by adding a simple binocular stand.

One of the advantages of this aid is that it enables a man to visualize the proper depth perception with the ranging reticle that he should in the T41 range finder. Actual ranging with the range finder is a simple matter of depth perception once the operator is able to see the ranging reticle in stereo.

Those persons with poor depth perception will require more practice than the average man. The amount of practice necessary is not practical with the tank, but is easily done with the aid.

A recommended ranging procedure is for the gunner to sit approximately 18 feet in front of the aid, holding the control lines.

The instructor places the target on the terrain and records on a score sheet the scale range. Targets must be kept movable so the operator cannot "catch on" to the target range. The instructor moves the reticle so it is off the target and tells the gunner to range on the target. The gunner operates his control lines to place the correct portion of the reticle at target range.

The instructor records the reticle range on the score sheet. After moving the reticle off the target, he allows the gunner to range again. This procedure is repeated five times for each target at each range.

The score sheet will show the average error the gunner is making and over a period of time this should not vary over the acceptable limits established for the T41 range finder (4 UOE).

This aid is not designed to replace the range finder nor to make a person a qualified gunner, but if used in conjunction with the actual instrument it will speed the required gunner training and ease the training problems of the organization. It is used as an intermediate step after the explanation of the range finder and prior to commencing work with the range finder.

Detailed plans of this device are being forwarded to OCAFF with recommendations that it be accepted as a standard training aid.

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—Hitler in *Mein Kampf*

HITLER: A STUDY IN TYRANNY.
By Alan Bullock. 776 pp. Har-
per & Brothers, New York.
\$6.00.

Reviewed by
MICHAEL A. MUSMANNO

For reasons not strictly consonant with scientific reality, writers and speakers from time immemorial have gone to the animal world for similes descriptive of human qualities. Whether rhetorically justifiable or not, no one will seriously question the employment of that device in describing Adolf Hitler as a man who was as wise as a serpent, crafty as a fox,

—The Subject—



Captured German Photo

ravenous as a jackal, greedy as a boar, false as an adder, pitiless as a jaguar, and insensate as a vulture. But even this combination of malodorous zoological specimens would have meant little to the peace of any small town in Germany, much less to the whole of Germany and nothing at all to the world were it not that they were joined by a furry creature which represented the ferocity, the gluttony, and the mercilessness of the entire savage animal kingdom—the Russian bear. Had that bear not sealed off the eastern wall of the Fuehrer's lair, the Hitlerian wolf would never have prowled off to the west, ravaging and macerating nations and peoples, leaving desolation and despair in his predatory tracks.

Everything that is said of Adolf Hitler must be doubled when speaking of Joseph Stalin. On August 23, 1939, Stalin drank a toast to Hitler: "I know how much the German nation loves its Fuehrer; I should therefore like to drink his health."

Several hours later, Molotov and Ribbentrop signed an agreement which made Stalin and Hitler the jaws of one beast which at once set out to devour its first victim—Poland.

Alan Bullock's book should be read by every person who has the slightest to do with American foreign policy, and it should be required reading in all colleges and universities. Only by knowing the past can the future be charted.

Although Bullock's scholarly and exhaustive work reveals with noon-day clearness the whole Moscow-Berlin web into which the human race was sucked like a big fly, the book's

—The Author—



Harper
Alan Bullock is an Oxford historian who abandoned his research work during World War II to help build up B.B.C.'s foreign broadcasts to Europe. He later became Diplomatic Correspondent of B.B.C.'s European Service. Mr. Bullock taught Modern History at New College before being appointed in 1952 as Censor of St. Catherine's, Oxford.

—The Reviewer—



Parry Studio

Michael A. Musmanno is an associate justice of the Pennsylvania Supreme Court. During World War II he served as naval aide to Gen. Mark W. Clark. Later a judge at the Nuremberg International War Crimes Trials, he is the author of seven books, including *Ten Days to Die* (1950), the dramatic account of Hitler's last ten days.



The Axis partners in their heyday. Mussolini and Hitler, flanked by Keitel, poring over the map as they plan to plunge nations and peoples into world war.

greatest value lies in depicting the imperative demand for an international force which will quickly seize Hitlerian and Stalinist spiders before they begin to spin their circles of terror and conquest.

One reads with sickening fascination the whole morbid tale of prime ministers, ambassadors and presidents hurrying on trains, racing in automobiles, streaking through the skies and climbing the Bavarian Alps to plead with one human being that he not destroy the world. What happened to the dignity of the human mind, the beauty of the human soul, the neatness and precision of the human intellect, the wisdom and learning of the ages, that the most powerful nations cringed before this one vulgarian who still carried with him the dust of the park benches on which he had slept?

Every European and American diplomat who participated in this debasing homage was aware of Hitler's destructive plans, his nihilistic designs and his moral destitution—all advertised and proclaimed in his book which appeared in bookshops throughout the world. The pages from *Mein Kampf* which Mr. Bullock quotes are terrifying today in their prophetic accuracy. Between 1924, when the book was published, and 1939, when its print ran into blood, event after event gave ever-accumu-

lating proof that Hitler intended to really erect the abattoir of intolerance and aggressive war which he so graphically described in that best-seller which even made money in America.

What caused Neville Chamberlain to shout with exultation, after Mu-

nich, that he had brought back to England "peace with honor"? He knew that he had participated in a "deal" which gave part of a country not his own to another country headed by an admitted treaty-violator. On April 28, 1938, Hitler spoke to the Reichstag but he addressed himself directly to President Roosevelt with the words:

Not only have I united the German people politically, but I have also rearmed them. I have also endeavored to destroy sheet by sheet the treaty which in its 448 articles contains the vilest oppression which peoples and human beings have ever been expected to put up with.

Hitler rearmed Germany in violation of the Versailles treaty, he built a navy in defiance of a Versailles prohibition; he constructed submarines in opposition to a Versailles injunction; he marched into the the Rhineland, and in doing so trampled on the Versailles parchment. Hitler spoke to his generals as a robber chief outlines his plans for a large scale piece of outlawry:

There have never been spaces without a master, and there are



The pageantry of Nazism. One of the prime factors in stimulating mass hysteria was the mass military spectacle, a familiar thing in the dictatorial pattern.



In the Russo-German Pact of 1939 two vicious dictators joined in a plan for the rape of Europe. Stalin and Ribbentrop look on as Molotov signs the agreement.

Captured German Photo

none today: the attacker always comes up against a possessor. The question for Germany runs: where can she achieve the greatest gain at the lowest cost.

How could anyone achieve "honor" by dealing with this man?

To a student of the period and one who has read the scores of memoirs which have poured forth from German generals, admirals, diplomats, agents, and confidantes, and the equally large number of volumes which have rolled off the American and British presses authored by observers of the Hitlerian era, Mr. Bullock's book presents very little that is new. This observation, however, is not intended to be disparaging. It is like saying that anyone can build a battleship if he has the 10,000 pieces of equipment, armor, machinery and ordnance which go into the construction of a dreadnought. Alan Bullock had more than 10,000 documents to analyze, evaluate, digest, compare and correlate. And from this mass of material he has produced an authoritative, readable, accurate account of the most catastrophic personality this world has ever seen. This book was needed. It was imperative that someone compress between the covers of one volume this appalling story, many of whose incredibly daring events could, without authentication, well be doubted as

being considerably exaggerated if not outrightly invented.

Napoleon, Caesar, Genghis Khan, Alexander and Philip galloped through history to the accompaniment of failing empires and crashing dynasties while cities, nations and civilizations perished in flames. But

with their deaths new civilizations arose, and the ambitions of the deceased tyrants were buried in the ashes of the ruins they had wrought. However, what Marc Antony said of Julius Caesar in blandishment, self-protection and appeasement, can only be said of Adolf Hitler in tragic truth—"the evil that men do lives after them."

Stalin could never have become the global colossus of fear had he not perceived what his Red legions could do against the best trained warriors in the world. Stalin ignores—for all tyrants are essentially ignorant—that the hammer of his offensives needed the anvil of an allied army on the other side of the enemy which, of course, was supplied by the United States, Great Britain and France. Joseph Stalin cannot expect today to have any such anvil no matter where he attacks, because his satellites would crack like porcelain dishes under the first blow of war. However, in the meantime the waters of the Rhine, the Danube, the Tiber and perhaps even the Hudson would be incarnadined with a new outpouring of blood in the first clash of atomic monsters.

It is possible that the world today



Prelude of things to come. Hitler, accompanied by Keitel and other staff and local commanders, views the destruction resulting from strong Allied air raids.

Captured German Photo

PANZER LEADER

by Heinz Guderian

The memoirs of Germany's great panzer leader and mobile warfare's great executor constitute one of the top books to come out of history's greatest war, and as a solid piece of history of mobile warfare and its contemporary tool, the tank, are required reading for all members of the mobile arm. The book comprises a real slice of the background of doctrine, organization, tactics, techniques, equipment, history and leadership in mobility in war.

\$7.50

might still have been divided into armed camps even if Hitler had not existed. I myself do not think so. If Stalin's conquistadorial hunger had not been whetted with the swallowing of Latvia, Lithuania, Esthonia and half of Poland, all put on his plate by Hitler, and if Bulgaria, Hungary, Albania, and Rumania had not fortuitously been harvested by the mowing machine of his divisions pushing back his treacherous erstwhile ally, Stalin would have still schemed and planned for the world Communist revolution, but he would never have had the confidence of martial victory. Even today the Russians have an inferiority complex: the brazenry of the Vishinskys and the contemptuousness of the Molotovs are but conscious masks to conceal the awareness of an intellectual and cultural primitiveness. However, even a bow-and-arrow barbarian prince can be proud of an ambushing victory over a rifle-bearing army corps, and that pride can lead him into the folly of an open attack.

Therein lies the danger of Joseph Stalin and his presumptuous Politburo, still intoxicated from the triumphant march over the corpse of Germany into the Reich Chancellery with its artillery-churned bunker housing the burned and charred corpse of Adolf Hitler.

No person has the right to consider himself even reasonably informed on what is happening today unless he knows how this enlightened age could have produced an Adolf Hitler, and, more, how a Hitler could have been accepted by an enlightened nation. Scientifically and mechanically the world has made greater progress in the last century than it made in all the centuries which went ahead, but it is a serious question how much, if any, the intellect has been able, since the days of Aristotle, to educate the popular emotions.

Mr. Bullock calls Hitler "the greatest demagogue in history." He then says sententiously: "Those who add 'only a demagogue' fail to appreciate the nature of political power in an age of mass politics." America was rather amused at Hitler's oratorical performances before the huge crowds that turned out to applaud and cheer him, but it was no amusing matter. Hitler was in dead earnest and the people were in dead earnest. They



Captured German Photo
Goebbels, the mad intellectual.

were listening to what any people would wish to hear: their nation had not been disgraced in losing the war, the people had been betrayed, the nation was reborn, there would be employment for everybody, and there would be prosperity.

Nothing succeeds like energy. Hitler spoke incessantly and ubiquitously. By the time he became chancellor he had appeared in every town in Germany. Voice amplification and radio, of course, literally carried his voice into every home, and, with constant repetition, his message was able to penetrate many breasts which at first were steeled against it.

Of course, truth was never a part of the Hitler being. His speeches were masterpieces of deception and aggression. In *Mein Kampf* he said: "It is not by the principles of humanity that man lives or is able to preserve himself above the animal world, but

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ARMOR—March-April, 1953



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Goering, the mad voluptuary.

solely by means of the most brutal struggle."

Mr. Bullock comments:

This is the natural philosophy of the doss-house. In this struggle any trick or ruse, however unscrupulous; the use of any weapon or opportunity, however treacherous, are permissible . . . Astuteness; the ability to lie, twist, cheat and flatter; the elimination of sentimentality or loyalty in favour of ruthlessness, these were the qualities which enabled men to rise above all, strength of will . . . Hitler never trusted anyone; he never committed himself to anyone, never admitted any loyalty.

But dishonest, false and hypocritical as he was, the "jumped-up, ill-educated, loud-mouthed agitator" was capable of stirring audiences into frenzied and mad approval that must

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U-BOAT 977

by Heinz Schaeffer

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have been frightening to the whole world had the world been able to appraise what ill-directed emotionalism can lead to. Here was a man who had nothing to endear him to the people; he possessed no outer or inner graces; he cherished no heroic military record; he was no sportsman—he could not drive, swim or play any game, he paraded no distinguished accomplishments. All he could do was talk. And such talk!

After the abortive *Bürgerbräu Keller* Putsch of November, 1923, which resulted in the death of 16 people, Hitler was arrested and tried for treason. At the trial he verbally attacked the Republic he had tried to destroy; the very Republic whose authority the judges represented. He prognosticated even here his future dictatorship:

The man who is born to be a dictator is not compelled; he wills it. He is not driven forward, but drives himself. There is nothing immodest about this . . . The man who feels called upon to govern a people has no right to say: If you want me or summon me, I will co-operate. No, it is his duty to step forward.

The judges of that tribunal have a responsibility to history. Although they found Hitler guilty of treason, they sentenced him to but five years in prison, and then released him when he had served only nine months of his term!

Bullock's book of 700 pages tells the whole story. Nothing is omitted. In it you will find Hess, the mad pilot who flew to England to stop the war; you will find Goering, the mad voluptuary; Himmler, the mad butcher; Goebbels, the mad intellectual; Ribbentrop, the mad simpleton; Hans Frank, the mad esthete. The whole menagerie of lunatics is here.

Mr. Bullock also devotes many chapters to Hitler's military exploits, and here Hitler is shown to be the biggest lunatic of all, save the generals who allowed him to drive them into obvious disaster, ruin and disgrace.

It is too bad this book cannot be put into the hands of every inhabitant of Russia, so that they can see what is the fate of Russia under their own Adolf Hitler.

ROMMEL

The

Desert Fox

by Brig. Desmond Young

From the strike to the West in 1940 on through the African campaign, the Allies had repeated evidences of Rommel's ability in the field of mobile warfare. Small wonder that Churchill said of him "His ardour and daring inflicted grievous disasters upon us . . . We have a very daring and skilful opponent against us, and, may I say across the havoc of war, a great general."

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FORMOSA

A timely book with the eyes of the world focused on this troubled spot. The author, who first saw service in Formosa with the State Department in 1912, handles his subject in three parts: background, presenting the physical setting; Developments since World War II dealing with the course of United States policy, both in Formosa and the Far East; and International commitments as they affect the island; and thirdly, an analysis of the future.

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From Peter the Great through the Enlightenment.

A psychological portrait of the Russian mind from the Middle Ages to the Crimean War, drawn from a careful analysis of the Russian educational system, class structure, press, etc. Bibliography and index.

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Their own stories told by wounded officers and men of their rescue from the field of battle in Korea, their treatment (including the miracles worked by modern medicine), the courageous and patient care given by nurses and medics, and inevitably, a good deal about the war, the fighting, and their comrades in arms. By the author of *They Were Expendable*.

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Another volume in the American Foreign Policy series, edited by Sumner Welles. The author reviews salient features, geographical, historical, political, economic, and social of Mexico, both past and present. He ties in the United States, in its Good Neighbor role, and how she has assisted Mexico in the beneficial evolution of the country next door.

by Howard Cline

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Can Russia Survive?

This book describes the dark side of Soviet Russia. Five leading London publishers turned it down on the ground that it presents a biased view of that country. In 1934, Mr. Czarnomski wrote a book, entitled, *Hitler Means War*, and several publishers turned it down, because it was alleged to present a one-sided view of Germany. In both cases the author freely admits the charge. He is utterly biased against tyranny and oppression, against cruelty and the degradation of man. This book is offered to those who are equally biased and have the courage to look ugly facts in the face.

by F. B. Czarnomski

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THE ARMY OF TENNESSEE

Nowhere in the annals of the United States military history is there a more tragic, yet valorous story than that of the Army of Tennessee. Prior to publication of this book, Douglas Southall Freeman wrote: "The greatest gap in Confederate military history concerns this Army." In Mr. Horn's book this is fully answered.

by Stanley F. Horn

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OUT OF STEP

A study of young delinquent soldiers in wartime; their offenses, their background, and their treatment under an Army experiment conducted in the British army. The author lived with two hundred persistent army offenders in an experimental camp for two years. The methods of training by which some remarkable successes were achieved are described in detail.

by Joseph Trenaman

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The Armor of Organization

According to the author, misorganization of the Armed Forces has laid a heavy toll of blood and wealth in past wars. In the next war, it may be the margin between defeat and victory. The nation can no longer afford this waste. The Armed Forces must put on the armor of organization. This book tells how and why this is so, and what to do about it.

by Alvin Brown

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(See page 20)

MAY-JUNE, 1953 • 85 CENTS



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**EDITED BY
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with the assistance of Rommel's son

MANFRED ROMMEL

the story of a master of mobile warfare . . .

When Erwin Rommel died—by forced suicide at Hitler's command—he left behind in various ingenious hiding places the papers that recorded the story of his dramatic career and the exact details of his masterly campaigns. It had been Field Marshal Rommel's custom to dictate each evening a running narrative of the day's events and, after each battle, to summarize its course and the lessons to be learned from it. In addition he wrote, almost daily, intimate and outspoken letters to his wife in which his private feelings and, after the tide turned, his forebodings found expression. From this vivid first-hand material, Liddell Hart, one of today's foremost military authorities, has drawn a complete, authoritative account of Rommel's campaigns. To this is added, by Rommel's son Manfred, the story of the Field Marshal's last weeks and the final day when, surrounded in his own home by a machine-gun company, he was given the choice of taking poison and receiving a state funeral or standing trial for treason with the prospect of persecution for his family afterward. This is the definitive military history of Rommel's campaigns, told in his own words, and at the same time a human document of engrossing interest. All the memoirs that have been published by the leading wartime figures on both sides have been written since the war, in the light of postwar knowledge. Rommel's writings are contemporary. He alone had no opportunity for revision. What is more, for at least half of the period during which he was writing, he thought he was on the winning side!

Watch for the exclusive feature review in the July-August issue of ARMOR.

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Volume LXII

MAY-JUNE, 1953

No. 3

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The German General Staff

by
Walter Goerlitz

The first comprehensive history of the Prussian and later German General Staff from its earliest beginnings in the Thirty Year's War to the German unconditional surrender in 1945. The Modern German General Staff with all its vaunted uniformity of purpose and action was subject to many different intellectual and political strains and tendencies. There were aloof and cold technicians, warmhearted, emotional men with European conceptions, fanatical Nazis, gullible dupes, and true idealistic aristocrats like Stauffenberg.

\$7.50

LETTERS to the EDITOR

Any Suggestions?

Dear Sir:

Many thanks for your prompt reply to my request for a subscription to your publication. I have read and re-read and greatly enjoyed the January-February issue, and trust that future issues will be as informative and useful as this.

One thing bothers me—being far too unfamiliar with US military matters, I find myself often confused by US military terminology, which appears to be rather different from our own—FOs not FOOs, tank companies and platoons rather than squadrons and troops, and so on. Could you suggest any general publication, which is available to non-US personnel, and which might help to clear up this basic difference in definition?

A. A. LOMAS
Capt RCAC(RF)

King's College School
Windsor, Nova Scotia

Welcome, to the 19th Group

Dear Sir:

When you spot an outstanding Armor officer, nine times out of ten you'll find on checking, that among other things he is a regular reader of his branch magazine. Most every senior Armor officer I have talked with on this point agrees.

That's why, when the 510th, 322nd, and 141st Tank Battalions (three fine outfits, by the way) were attached to the 19th Armored Cavalry Group, we sent out a call to see how many new subscribers and renewals we could get.

I am delighted to forward you the enclosed list of 33 names, together with a total of \$156.75 covering their subscriptions.

If space permits, I hope you can publish their names and join me in saluting these gentlemen for (1) their professional interest in and appreciation of

a fine service journal; and (2) the spirit of cooperation with which they, like so many others, are supporting ARMOR and its objectives.

Our greetings to you and your staff, and best wishes for continued success.

COL. C. E. BROWN
CO, 19th Armd Cav Gp

APO 46

● ARMOR does not make a practice of publishing lists of names of subscribers nor has it in the past recognized outfits who send in bulk orders. Don't think we don't appreciate the order because we do! Many outfits have subscribed 100% and they have gone unheralded. However, we do want to recognize the 19th Group and welcome them into our midst. We are going to call on them in the very near future for material and in return offer them any assistance that this office can provide.
—Ed.

Errorrrrrrr!

Several letters and phone calls were received since publication of the March-April issue pointing up some errors. Summing them all up they read like this.

Dear Sir:

Your March-April issue is fine but—on page 15 the word is ARMOR not "AMOR." The lower right hand photo on page 41 is not an M4. On page 60 the caption states "Shermans." They are light tanks! On page 66 the photo is a Flak 41, not a 40! On page 73 you show a picture of Hitler viewing destruction by Allied air raids. This is not so, the picture shows a wrecked train in Poland taken in 1939.

● We blushing admit our shortcomings and realize that we are not infallible. We will try to do better. The letters and phone calls ranged from all ranks including the wife of one Captain of Armor. We appreciate your

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Rates: See bottom of contents page.

interest and are happy to note that you are interested enough to help us improve. After all it is your magazine! —Ed.

Core of the Matter

Dear Sir:

In the "Core of the Matter" (March-April issue, pp. 40-41) Army Ordnance appears to be trying to pat itself on the back over an ammunition story—which actually should cause Ordnance to hide its head in shame.

Brig. Gen. Paul M. Seleen, C.G. of the Detroit Ordnance District, is quoted as having recently revealed the story of how a "top secret" request from General Eisenhower "led to the almost immediate delivery of a revolutionary new antitank shell that stopped the German Tiger tanks at St. Lo." The Ordnance story is quoted as saying that on "D-plus 30" the "Allied spearhead was being seriously slowed by new Nazi tanks with incredibly thick and impenetrable armor shielding"; and that the "Supreme Commander pointed out that an antitank shell which could penetrate this armor would prevent the slowing down or even the stopping of the Allied invasion."

"Army Ordnance," the article goes on to say, "had been developing a new shell, but no such shell was ready for use on Friday, July 7th, 1944." But Ordnance rushed through their "new shell"—and on 13 July, 1944, Aberdeen Proving Ground is said to have announced: "The answer to the German Tigers has been found . . ."—a shell with a super-hard tungsten-carbide core.

The alarming truth of the matter is that Army Ordnance was amazingly dilatory in developing and delivering an ammunition item they themselves now admit to have been a very critical one.

This "revolutionary" ammunition was actually standardized by the German Army in 1940. It was available for the German invasion of Russia over four years before General Eisenhower put in

a frantic request for it to his Ordnance.

Rommel had it to fight the British with in the Western Desert in 1941. From Rommel, British and American intelligence had samples of this ammunition—and plenty of first-hand experience with its effectiveness—years before lack of it caused us trouble in Normandy.

It's significant that our then friends, the Russians, didn't take years—as we did—to learn their antitank ammo lesson. After they'd experienced this German "AP 40" shot—and this ammo is solid shot, not "shell"—during the summer of 1941, they barreled through on it. From early 1942 on, it became their principal antitank round.

And incidentally, those weren't Tigers which were making trouble for the Allies then. They were the much lighter 50-ton Panthers. Just why Army Ordnance had failed to furnish the Army with projectiles to stop these tanks—which were first used in 1943 on the Russian front, and about which the Reds had told us all—is a major question.

GARRETT UNDERHILL
Washington, D. C.

An Assist to Our Ally

I enclose a check for one year's foreign subscription to ARMOR. I should be grateful if you would please arrange to forward your journal to:—

Michael K. Shaw, Esquire
83 Worples Road, Wimbledon
London SW 19,
England

Michael Shaw is a young, enthusiastic, Territorial Army Reserve Officer, serving in one of the armored regiments of the British Territorial Army stationed near London. He has expressed a keen interest in the type of information which your journal contains, and I feel that it will be beneficial both to his standard of efficiency, and to that of his men, if I can see to it that he gets ARMOR regularly.

JOHN P. CODY
Wing Commander RAF
Norfolk, Virginia

HITLER: A STUDY IN TYRANNY

by

Allan Bullock

Here is a detailed and dramatic canvas of world history in the days when men drifted toward totalitarianism, and of the cataclysm which followed. Here is the incredible story of the formation of the Axis, of how Mussolini became the puppet of his master to the North, of how neither could dupe the insatiable Franco. Here are the men, the events, the documents and the records; the Anschluss, Czechoslovakia, Munich, Prague; the Nazi-Soviet pact, the fall of France, the decision to attack Russia. All have been exhaustively examined.

\$6.00



THE COVER

Mobility is not limited to tanks! Self-propelled antiaircraft artillery units, with their full tracks, are a part of the mobile team. Despite static conditions in Korea these units are proving their worth in support of Infantry and are ready to perform their primary mission—AA defense against high-speed, low-flying, enemy aircraft. A glimpse at the cover will show members of AAA units performing some of their many tasks. ARMOR salutes them for their contribution to the ground force team.

Upon assuming the chair of editor of ARMOR magazine, in addition to being appointed Secretary-Treasurer of the U. S. Armor Association, a fuller realization of the great task, coupled with tremendous responsibilities, hits home. Likewise, admiration for those who have preceded is bound to flow, and emulation of those who have been outstanding is a goal that only by holding this chair will one fully appreciate.

While on a normal Army assignment, the chain of command is used, but here every member and every subscriber is the commanding officer. To fulfill the desires of both categories is the wish of the editor. At times—an impossible task!

An appraisal of the immediate past extolling Major William Gardner Bell, Editor No. 26, is most fitting and proper.

Assuming the editorship on the 20th of May, 1950, he lost no time in redesigning the magazine, adopting the new title ARMOR in harmony with the Army Organization Act of 1950. The format was revised from cover to cover. He established many new features such as *Sum & Substance*, *Reconnoitering*, *How Would You Do It?* and *Magazine Roundup*, and obtained outstanding book reviewers. All of this was accomplished prior to the next issue—two months hence.

Upon this solid base our magazine has continued to grow, and today it presents his successor with a real challenge to continue its present high standards. High standards herein denote class "A" professional levels, from both the military standpoint and the journalistic view. One need only mention the fact that for the past two years *The*



American Institute of Graphic Arts has seen fit to award the Association a Certificate of Merit for outstanding journalistic endeavors.

The standards attained militarily rest greatly upon the shoulders of the reader; for it is he who gratuitously contributes the material for publication. But its worthiness to be published, its timeliness, its appropriateness, its reader appeal, rest solely upon the decision of the editor.

A perusal of back issues will justify the accolade that Major Bell has unreservedly contributed greatly to improving the standards of the magazine. In addition, paid up memberships have more than tripled during his incumbency, and the present trend is on the upswing. Prospects are excellent and this

can be attributed mainly to the quality of the magazine.

Under the guidance of a distinguished Council, the Association has grown in stature, in harmony with the magazine.

The last two annual meetings, both held at Fort Knox, have done much to enhance the prestige of *Armor*. Hosted by the Commanding General of The Armored Center, all in attendance agreed that these occasions were gala affairs. Attended by experts in the mobile field, these meetings have served as a medium to review in retrospect the preceding year's happenings and as a vantage point to view the year ahead.

Here, a revised constitution was adopted providing a wider base upon which to operate.

Here, the objective and aims of the Association were voiced and spread, thus increasing membership.

During Major Bell's tenure, several Council meetings were held throughout each year.

Here, the approval was given to the Secretary-Treasurer to perform certain actions which, in many instances, were originally proposed by him.

Here, the awarding of annual certificates to the distinguished *Armor* graduates of the various institutions operating *Armor* ROTC instruction was approved, which was later expanded to the giving of books on mobile warfare, plus a year's free subscription to *ARMOR* and membership in the Association. This did much to enhance the prestige of the branch at these institutions (covered elsewhere in this issue for the present year).

Here, approval to move the headquarters was given. Although necessitated by termination of a lease, the Secretary was allowed to use his discretion to establish headquarters elsewhere. More spacious and more desirable office space was obtained with no interruption to work loads.

Here, the guidance for the advocating of an Army-wide Association without infringing upon the rights of those Associations, as presently constituted, was given.

Here, in his farewell Council meeting, a beautiful brief case on behalf of the Association was given as a small token of appreciation for outstanding performance of duty, and General Crittenberger, the Association President, reviewed Major Bell's many accomplishments during his tenure of office.

No one more than his successor realizes the trials and tribulations he went through to emerge with an outstanding product of an outstanding Association.

No one more than his successor realizes the task confronting Editor No. 27 to maintain the standards as set by Major Bell. The willingness to unstintingly contribute his service to such a worthy cause is a tribute to him.

His assignment overseas is the Association's loss and that Command's gain.

But, in another sense, it is not a loss, for we fully realize he will always be a part of the Association and for what it stands.

In appreciation, we say—thanks for a job well done!

The Editor



CARDED

THE RUSSIAN THREAT

by LIEUTENANT GENERAL SIR GIFFARD MARTEL

IF a third World War should break out it will presumably start with a fight for air superiority over Europe and Great Britain. Europe is the key to the situation but Great Britain is the base from which most of the Western forces will have to operate and it will be very vital to gain and keep air superiority over that country.

The Fight for Air Superiority

At present the Russian Aircraft are ahead of the Western machines in some respects and their numbers are very great. These matters are being rectified but the early stages of the Air warfare will be a very anxious time. The last thing that we must do is to introduce any feeling of complacency on our side, but at the same time there is one aspect which may give us a little comfort. This is over the question of administration. With

large air forces operating from many different parts of the country the administrative problems are very serious. The Russian has little natural capacity in this direction. I saw this illustrated in many ways during the last year of the war when I was in Russia. On one occasion when I saw a large stock of spare parts for tanks, at a railway centre, I asked where they were being sent and was told the name of their destination. I was very surprised and said to the Russian officer: "But surely you know that there are no tanks in that area; they are all in this other direction." He replied that he knew this but he would still obey his orders and send them to the place that had been named. The reason for this was perfectly clear. If he had used his initiative and sent the spares to the right place it would have been of the greatest help to the armoured

forces and no more would have been said. But if for some unforeseen reason it had turned out to be the wrong place he would certainly have been liquidated for disobeying orders.

This total lack of initiative which Communism imposes on the forces is a severe handicap and results in bad administration. This is, of course, only one instance of what happens. The handicap extends in many other directions and I feel sure that this will have a harmful effect on the fighting capacity of all the Russian forces including their air forces.

Then the Russians must still be behind us technically. Right up to the end of the war there was practically no radar or flying on a beam. Although I flew a great deal over Russia I could never get the pilot to take me anywhere unless he was sure he was able to see the ground, and

they nearly always followed roads or railways. Of course Russia has made great strides since then, but I find it hard to believe that she can have caught up to us in these five or six years even with the help of the German technicians.

The Next Phase

The fight to gain air superiority may take some time. I do not believe that either side will launch any major land operations until they have secured some measure of superiority in the air, but we must now consider the next phase. There are some officers who think that the war could then be won by air bombardment behind the enemy lines, but most of us would not agree for one moment to a dependence on this policy, though air bombardment will of

through woods with little confusion. They are also very good at camouflage. I do not think that our air forces would find any very good targets when the Russian forces were advancing in this manner.

There is no doubt but that we shall have to use land forces in cooperation with Air forces if we intend to prevent the Russian forces from overrunning Europe. We must therefore examine very briefly the trend of land warfare in the two World Wars and up to the present time. The changes that have occurred have been almost entirely due to the introduction of armoured warfare and it is on that aspect that we must therefore dwell.

Starting with the First World War we all know that the tank was introduced as a siege weapon to break through the fortifications in France.

heavy line breaking tank, hence the H.Q. Tank Corps in France at once demanded that lighter and faster tanks should be produced for this role. We pointed out that fighting forces had always been divided into these two parts—the mobile troops (cavalry) for exploitation and the slower moving, harder hitting troops (infantry) for position warfare. It was clear at this early stage that both these would need the support of tanks. The French adopted this policy as well and with considerable success. The British however did not succeed in getting their lighter and faster tanks, which we called medium tanks, built and sent to France in time for that war.

Between the Wars

After the First World War, both the French and British retained that sound policy but in each country the financial stringency was such that very little progress could be made on the material side. In their thoughts and writings however there is no doubt that the British led the world during this period between the two world wars. We were convinced that we were returning to a period when great victories would again be won by the use of mobility. By making full use of mechanical power and armour we aimed at repeating the great successes which the cavalry had achieved in bygone days. The Germans watched us very closely and as far as they could do so they copied all our ideas.

As far as the Army was concerned the financial stringency was not lifted till just before the Second World War. This was too late to enable us to be properly supplied with tanks at the start of this war, but we had retained the same sound policy. We produced "Matilda" and then the "Churchill" tank as our heavy tanks for position warfare and in the early days of the war they were the best heavy tanks possessed by any nation at that time and they carried out very valuable work in assisting the infantry in position warfare. The French produced a similar tank in the Char B. For the mobile role we were not so successful. It is much more difficult to produce a reliable high speed tank than a slower moving heavy tank. For this role we produced the Crusader which



British Official

LIEUTENANT GENERAL SIR GIFFARD LE QUESNE MARTEL, D.C.B., K.B.E., C.B., D.S.O., M.C., served with the British Forces in World War I. Prior to World War II he held the posts of Assistant Director and Deputy Director of Mechanization in the British War Office. In 1940 he became the Commander of the British Royal Armoured Corps. In 1943 he headed the British Military Mission to Russia. Now retired, he has authored several books, the most recent being "East versus West." The thoughts contained in this article are expanded in more detail in General Martel's latest book.

course play a very great part in the war. It may be that bombing the Russian vital centres will force them on to the defensive and give us air superiority. There are other officers who think that the advance of the Russian forces could be halted by using sufficient strength in the air. These officers underestimate the capacity of these splendid Russian soldiers. They are nearly all peasants and I have seen them moving by day or by night cross-country and

The speed of the tank at that time was only a few miles an hour and it could only travel 20 miles on the petrol that it carried. The idea was if the tank could enable the forces to break through the defences, the cavalry and other arms would then be able to exploit the success. At Cambrai however the British found that these troops needed assistance from machines of this nature for the task of exploitation as well. This could not possibly be done with the great



Air superiority—both strategically and tactically—is always a prime requisite.

was rushed into production while it still had some unreliable features. The only suitable engine which we could have obtained was the Rolls Royce but Air Force priority prevented us from having this engine till a much later date. The Ministry of Supply were slow in rectifying the unreliable features of the Crusader but eventually this was done and it became the Cromwell which was a splendid cruiser tank.

The great delay caused by the pre-war financial restrictions was also reflected in the size of our tank guns. The Germans built their first 2000 tanks with a 37mm gun. We used a 2 pr in our early tanks which was slightly larger than the German 37mm and we prepared a 6 pr gun as the next step but due to our late start it was a long time before it could be introduced.

The Second World War

In the early stages of the Second World War the Germans swept all before them. Poland was defeated in a few weeks and France in a month. This was achieved by the use of highly mobile forces equipped with light and medium tanks. Much the same success was achieved by the Germans against the Russians in 1941. They did not bring up any heavy tanks. There was no necessity to do so for there was no position warfare at that stage. In the early

days in North Africa we used our heavy tank Matilda in position warfare and the Crusader in the mobile role and this policy worked splendidly.

In the USA great interest had been taken between the wars in armoured warfare and both the Lee and Grant machines proved to be splendid cruiser tanks for the mobile role. They were well ahead of the British cruisers at the start of the war and the USA generously gave our armoured divisions in North Africa a considerable number of these tanks at a time when they were urgently needed in America for training.

As the war progressed there was naturally far less opportunity for mobile warfare, and there was no warfare of this type in Tunisia or Italy. It also became clear that heavy position warfare would be the role in the early stages if we landed in Normandy. The urgent necessity was therefore heavy tanks and not cruisers. The Germans appreciated this very quickly and they changed almost their whole production effort into building heavy tanks. Even the Panther cruiser tank became practically a heavy tank. In our country we should have maintained our sound policy of the two types but we should have pressed for more effort being put into the heavy tanks. Indeed the necessity for the next

step after the Churchill had been apparent for some time and we had been pressing for this from H.Q. Armoured Forces. In the USA pilot models of heavier tanks were constructed but production was kept almost entirely to the Sherman tank which was an improved model of the Lee and Grant cruiser tanks and proved to be a great success.

The Dual Purpose Tank

It was early in 1943 when I had just gone to Russia that we (the British) dropped our sound policy and a demand was made that we should have a dual purpose tank that would fill both roles. No attempt was made to push ahead with the next model of the heavy tank though several designs had been prepared. It would have been comparatively easy to have produced a number of these new heavy tanks but it would clearly take a long time to produce a dual purpose tank even if that was what we wanted. Mr. Duncan Sandys who was at the Ministry of Supply made a great effort to save the situation but these attempts were not supported and when we landed on the Normandy beaches we had good cruiser tanks but our heavy tanks were quite out of date and practically useless. As regards the dual purpose tank, not even the first model has yet been made.

We all know what happened as a result of this change of policy. Our tanks were blown off the battlefield in Normandy. I could do nothing of course to influence the decision while I was in Russia. This was a very unfortunate but clear instance of the harm that is done when one departs from a sound principle. Three tanks of the dual purpose type which was named the Centurion were completed just before the conclusion of the war in Europe. It is a beautifully built tank and very reliable but it is of course bound to suffer from being a dual purpose machine. If it had the necessary armour and gun power to take on the latest heavy tanks which it might have to meet it could not possibly have the necessary mobility for the mobile role.

Unfortunately it is always difficult to reverse a decision when it has once been taken in a great concern like the Army. We remained with this decision for a dual purpose tank

for five years. Fortunately a change has now been made. We are to have a heavy tank for the heavy role as well as the more mobile tank needed in the Armoured division. So far as it goes this is a return to our sound policy but it is very unfortunate that we have lost all these years in the development of this policy. I may not be up to date but I believe that opinion among the armoured forces in the USA is swinging round to this necessity of having these two types of tank for the mobile and the slower but harder hitting role.

The Risk of Russian Aggression

After the war it soon became apparent that there would be trouble with Russia and that we might have to establish a system of defence against possible Russian aggression in Europe. Field Marshal Montgomery was anxious to establish strong infantry defences for this purpose. He is a great master of position warfare. It was however obvious that if we were deployed across Europe for this type of fighting we would be outnumbered by some 3 to 1 by the Russian forces and the Russian is very good at position warfare. Under such conditions our chance of success would have been very small. These proposals really ignored the main lessons of the war which had shown that linear defence was dead. Unfortunately these proposals were put in motion and most of the war time armoured divisions were demobilised while considerable strength was retained in infantry divisions. The exact opposite was what we required. This matter has now at last been rectified but it has caused us great delays and loss of efficiency.

It is now generally agreed that the Western nations must establish a number of firm bases on our side of the iron curtain. Based on these the Western nations must have some 25 armoured divisions and another 25 infantry divisions are needed to hold the bases. In the armoured divisions mobility must have top priority. It replaces the numerical strength of the Russian masses. The Russians made it very clear to me that they are terrified of a repetition of that form of warfare which they encountered when the highly trained Panzer and mechanised forces advanced against them in comparatively

small strength in 1941 and caused them terrible casualties. We will not however be able to repeat these great and classic victories unless the forces which we use have the same type of mobility as that possessed by the similar German forces in the early stages of the war. They must be able to move rapidly between enemy columns or round their flanks or to attack the rear, and they must be prepared to spend a week behind the enemy lines.

For this purpose the tank used in the armoured division must have at least the same mobility as the Sherman, Cromwell or Comet tanks which were used as cruiser tanks during the war. It must have a cross-country speed of about 30 miles an hour and must be capable of going at least 160 miles on the petrol that it carries. For this role no very heavy armour is called for, as the whole policy for these mobile forces is to avoid meeting enemy strength and to use their mobility to attack the enemy wherever he is weak. The armour might even be slightly less than that which we used in our cruiser tanks during the Second World War. Having settled the questions of mobility and armour we now come to the vital matter of the gun. There must be no question of trying to carry a gun in our cruiser tank which will take on the enemy heavy tanks. Our armoured divisions must use their

mobility to avoid meeting enemy heavy tanks and they could certainly by-pass the heavy Stalin tanks and then carry out their task. In our deep and decisive advance into Germany from the Normandy bridge head neither the British nor the USA armoured forces ever engaged any German heavy tanks at all. These tanks did not possess anything like the necessary mobility to intervene in the advance of our mobile forces. The gun used in our cruiser tanks must be a dual purpose gun firing both H.E. and A.P. and must be the best possible gun that can be mounted in this tank without loss of mobility. The penetrative power of this gun is very important but this does not depend entirely on the calibre. The French already have a 75mm gun with greater penetration than the Russian 85mm gun and a gun of this nature is what is needed. Our cruisers must of course be a match for any enemy cruiser tank and we pressed for this continually during the war.

The Heavy Tanks

We must now turn to the heavier role of position warfare. Just as we have to be a match for the enemy in the cruiser role, so we must have heavy tanks that can deal with those of the enemy. Both in attack and defence it is essential that the enemy shall have the call on these heavy



The Churchill, developed by the British, was valuable in support of Infantry.

tanks in position warfare. Although we are counting on our mobile forces to disrupt the enemy we must be able to defend the firm bases from which they operate. At other times our infantry will have to capture and hold important positions to act as pivots for the mobile forces. Heavy tanks are essential in both these roles.

Air Support

In each stage of these operations air support is quite essential. In fact it would be impossible to launch these operations without air support and a fair measure of air superiority. Without a continuous system of air reconnaissance the Armoured forces could not operate at all and this reconnaissance is dependent on a certain measure of air superiority. Tactical air forces must also be available to operate in cooperation with the armoured divisions. Dive bombers firing rockets at enemy tanks may be decisive and bombing may be equally effective against anti tank weapons. Then again the normal enemy forces may be held up or delayed by aerial bombardment to enable the armoured divisions to pass round behind them and to attack them with the element of surprise. Driving off enemy reconnaissance planes to prevent them from observing the movements of our armoured forces is another important task for the tactical air forces working with armoured divisions.

Criticisms of These Proposals

The proposals which I have made have been criticized in the following ways. It has been suggested that Hitler's great victories in the early stages of the war by using highly mobile warfare, could not be repeated today. The critics argue that these successes were only rendered possible by the fact that the Panzer forces were engaging an enemy who had lost his morale and that the action by these German forces was in reality the pursuit of a defeated enemy. This was partly true in the case of the advance against France in 1940 but it is in no way true as regards the German advance into Russia in 1941. The Russian forces were well trained and full of confidence that they would be able to resist the attack of the Panzer forces. The German suc-



The American M4 proved to be the workhorse of the war; it was a huge success.

cess was in no way due to lack of morale on the part of the enemy.

By their success in the early stages of the war the Panzer forces showed us how to revive the great value of highly mobile warfare which had played such a vital part in so many great campaigns in history. This was the first stage in this revival, and depended mainly on the use of light tanks. The second stage which we would use today depends on having equally mobile armoured divisions but using cruiser tanks instead of light tanks. When used in this way there is not the slightest reason why we should not be able to repeat those great victories if we had the forces and if the Russians advanced against us.

It may be thought that as Russia now has a great many armoured divisions it will no longer be possible for us to carry out the mobile role which we have suggested. It must however be appreciated that most of the Russian armoured divisions have very few mechanised infantry and artillery units for the support of tanks. Russia is terribly short of mechanical transport. She is very handicapped in this way in mobile warfare. When the Western Nations have raised some 25 infantry and 25 armoured divisions which are standing at full strength in Europe, I do not believe, after my discussions with the Russians, that they would ever

dare to advance against us.

If we are to succeed we must however be whole hearted about this new policy. There are those who say that the armoured division must be capable of breaking through defences and then carrying out the mobile role. This is part of the old and false policy. Then there are those who would slow down the armoured division by including some heavy tanks in the division. We will never succeed unless we place mobility as the first priority for the armoured division. The Centurion tank will have many uses but it is in no way the ideal tank for the mobile role. The length of the "tail" behind an armoured division with Centurion tanks is at present quite frightful and precludes any real mobile warfare. The position is still worse if we add heavy tanks.

I gave these views to the Russians when I visited them in 1936 and in 1944 when they were our allies and they have kept to this policy to this day. The French have always followed this policy and I think the USA is moving in this direction. Surely we ought now to follow this line whole heartedly and allow no more deviationists to upset our sound policy. These views have the support of many officers with long and varied experience in armoured warfare and who have proved to be right throughout this period.

From the early days of North Africa, tankers have been drilled in the principles of Mobility—Shock Action—and Firepower. However, the topography of Korea has caused them new obstacles. Although limited in Mobility, they still have maintained their Shock Action and Firepower. Scaling mountains with tanks isn't in the books, but methods to accomplish this are related in

KOREA'S RIDGE RUNNING TANKERS

by FIRST LIEUTENANT WILLARD A. COLTON

IN North Africa and France our tankers learned the latest word in tank tactics—sweeping end-around plays that raised mile-high dust clouds; deep-thrusting breakthroughs that cut straight for the enemy's heartland; gigantic pincer movements that trapped whole divisions.

In the Pacific the tankers learned how to dash ashore on island beachheads and fight their way across the sand; how to hack their way inch by inch through the jungle; how to attack concrete bunkers with flamethrowers.

But in Korea the tankers have learned a new lesson: How to climb ridges and fight from mountaintops.

Tankers first took to the hills in force in the Mundung-ni Valley in December, 1951, when the 31st Infantry Regiment launched a bunker-busting operation. The Japanese had always built bunkers on the lower slopes of hills, where they could get good grazing fire across the valley floor. But the Chinese Reds build

their bunkers at the military crest and on the ridgetops; they are dug into rock, with log-and-dirt walls three feet thick. Tanks can't hit them effectively from the valley.

So the commander of the 31st decided to put his tanks where they could fire right into the enemy's teeth. In three days the 13th Engineer Combat Battalion slashed a road up the rear slope of Hill 605—about 1,000 feet straight up. Then four tanks were moved into position on top of the hill. The platoon leader spotted them where they could cover a battalion front, and dug them in so only the turrets were visible. Within a week fifteen Chinese bunkers had been knocked out. Bunker-building by the Chinese on their forward slopes came to an abrupt halt.

In the months that followed, tankers all along the front inched and winched their way to the ridgetops and the enemy found himself methodically blasted out of his hilltop strongpoints. At Mundung-ni, on Heartbreak Ridge, north of Kumhwa, wherever an old-line tanker would look at the high rock ridges and shudder, tankers are now facing the enemy on hills only a few hundred yards apart—across some of the nar-

rowest, deepest valleys that have ever been fought through. At Kalbak-kumi, north of Inje, tanks at one time were dug in less than 200 yards from the nearest enemy position, and in some sectors our tanks are on the same ridges as the Chinese.

Retaliatory fires by the Chinese have been highly unsuccessful. They can't get close enough with recoilless weapons to inflict any damage, and they are extremely reluctant to use artillery for fear of betraying their positions. Further, any mortarman will tell you how difficult it is to lay a mortar round on the crest of a razorback ridge. Twenty yards one way or the other and the round explodes harmlessly far down the side of the hill.

One Communist did get in a lucky round, however. The 61mm shell whoomed smack down the turret of a 31st Tank Company Sherman. The crew members had just finished firing and had crawled out of the tank. Nobody was hurt, but the tank went back for major repairs.

The ridge-running tankers must cope with problems besides enemy mortars—problems that have no solutions in the book. More than one tank, attempting to negotiate a steep hillside, has gotten away from its

FIRST LIEUTENANT WILLARD A. COLTON, presently a reservist and a newspaperman, served in Korea as PIO of the 31st Infantry Regiment during the fall and winter of 1951-52.



All photos U.S. Army

Although not most desirable, tankers use crestline positions to their advantage.

driver and slid hundreds of feet down the hill in a shower of rocks and dirt. Tankers have learned the hard way how easily an M-4 will slip its tracks if you try to navigate a slope any way but head-on.

One company lost a tank over the forward slope. The driverless M-4 plunged headlong into a Chinese outpost at the foot of the hill. The Reds poured out of their bunker and dashed frantically for their own lines. The tank rolled several times and plowed into a rice paddy, a total wreck. Seconds later the enemy opened up with mortars, automatic weapons and even artillery. They apparently thought a full-scale attack was in progress.

And men of another tank company perched their Shermans on a ledge so narrow that the ponderous vehicles slid ten yards back down the reverse slope every time the 76s were fired.

To help their *Easy-Eight* M-4s claw their way up the mountain trails, tankers put center guides from M-46 Patton tracks upside down on the M-4 tracks. Spaced about five blocks apart, or six or seven to each track, the center guides become four-inch grousers that help the tanks climb onto lofty crags like monstrous mountain goats.

A tough problem is ammunition supply. Ammunition can be trucked up by weapons carriers in good weather, but trucks are useless on icy or muddy trails. The little Weasel, with its high flotation and low

gear ratios, was found to be the ideal ammunition carrier. It can lug 30 to 40 rounds of 76mm, in fiber cases, up the steepest roads. It must be handled carefully, for rocks damage its tracks easily, but it has proven very satisfactory.

The ammunition problem is heightened by the fact that the high-climbing tanks are constantly in exposed positions. They can't maneuver around on the craggy hilltops, and their first round betrays their position to the enemy. As a result they have to make it too hot for the Reds to bring up their low-slung 75mm antitank gun.

"If you use enough ammunition they won't have a chance to fire

back," said the commander of the 31st Tank Company. "But if you run short they start sneaking up those 75mm antitank guns."

Concrete fuses, originally designed for use against Hitler's Siegfried Line, are much desired by the tankers. Their additional penetration is ideal for bunker busting.

In this type of operation we never fire indirect over here. It is always direct fire. You know all the hours we spent at Fort Knox learning how to use aiming circles? We've thrown the aiming circles away over here. You've got to get up high and shoot right down their throats.

The favorite weapon of the ridge-top tankers is the heavy-hitting and long-reaching .50 caliber machine gun. One tank of the company mounts twin fifties, one feeding from the left and one from the right. The same tank sports a fifty for a bow gun. This additional punch enables the tank to reach across the valleys with power and accuracy never possible with the thirties. Extra .50 caliber ammunition is carried in racks welded of reinforcing rods to the outside of the tank.

For tactical purposes regimental tanks are placed under operational control of the battalions. They are spread across the battalion front as much as possible, one or two to a company. But often the old, and still sound, rules of dispersion have to be flouted, for only one hill or finger will offer proper fields of fire across a battalion front. Then two, three or



Well sandbagged positions serve to protect the personnel from enemy infantry.

ARMOR—May-June, 1953

even four tanks must be spotted within a few yards of each other.

However, hilltop tactics do not necessarily call for close-in infantry protection. In fact the infantrymen normally are some distance from the tanks, because tank fire draws a lot of retaliatory mortar fire. The tanks can protect themselves against infiltration. With approaches to their positions wired and mined, the tankers figure they can cover each other with machine-gun fire and call in VT to break up any enemy raid.

In most positions the tanks could pull off their lofty roosts in a hurry if a pullout were ordered. But some of the routes up the mountains are so treacherous that tanks are swapped and left in position when one tank outfit relieves another on line. The tankers gather up their personal gear, trudge down the hill, and pick up another tank in the reserve area.

In at least one location the only route of withdrawal lay for many days through enemy territory. After a tank was winched to the top of a steep knoll on a friendly outpost, the rains came. When the deluge finally ceased, the tankers found themselves high and dry with a sheer drop-off behind them. Until a new road could be cut, their only way out was down the forward slope and through a Communist outpost.

Another rough problem for tankers in Korea is supporting infantry patrols. Forced to keep on the narrow roads through the rice paddies, the tanks find it next to impossible



Fields of fire from ridges are plentiful in the support of Infantry patrols.

to get in close enough for pinpoint support—especially since the infantrymen are usually operating far up toward the crest of the enemy ridge.

The best solution for the tankers is to hold fast; they can support most patrols without budging off their ridgetops. Since most patrols operate within sight of the MLR, the tanks can give solid overhead support all the way to the objective. Firing on known targets at known ranges, the tanks can give the kind of support seldom possible when both tanks and infantry are operating forward of their own MLR. Pouring 76mm and .50 caliber fire directly into the Red bunkers, the tankers can walk the infantrymen up to

within 25 or 30 yards of the enemy.

While Korea's ridge-running tankers are able to use hilltop rather than hull-down positions, they realize this practice cannot be considered normal. In Korea, the enemy uses practically no armor or flat trajectory weapons in forward positions. As a result, tankers can select positions from which they can best support the infantry with their high explosive and machine-gun fire. Such a practice against an enemy strong in armor would prove extremely costly. Likewise the principle of tank infantry employment is still sound. While certain positions in Korea may be held with tanks alone, this cannot be considered as doctrine. The use of tanks in this manner shows the extreme versatility of the weapon and its ability to fight in almost any type of terrain, and under almost any condition. The principles of tank infantry employment enunciated in the current field manuals are still considered to be sound. What the tankers in Korea are doing is writing additional chapters to those manuals.

Perched atop sheer cliffs and crawling along the jagged peaks of razor-back ridges, our tankers in Korea have dispelled for all time the notion that they are creatures of the open plains. Never again, perhaps, will this peculiar combination of factors occur: Extremely rugged terrain, a static front, and an enemy who builds bunkers on ridgetops. But if it does, you can rest assured that our tankers know how to take to the hills!



Twin fifty millimeter machine guns give added punch and firepower when needed.

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Thomas West Wilson Atwood
Norwich University



Richard J. Casey
Massachusetts University



Harry A. Johnston, II
Virginia Military Institute

5
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The United States Armor Association . . . **Salutes outstanding Senior**

In the year 1952, the United States Armor Association inaugurated the policy of presenting certificates to the Outstanding Senior Cadet in the Armor Reserve Officers Training Corps at the fifteen institutions where an Armor course is in operation.

In 1953 this recognition of achievement is to be continued. But, in addition to receiving the engraved scroll, the Council has approved the

awarding of a year's membership in the Armor Association plus a package of three books authored by three outstanding exponents of Mobile Warfare. These books are: "War As I Knew It" by General George S. Patton, Jr., "Panzer Leader" by Heinz Guderian, and "Preparation for Leadership in America" by Brigadier General Paul M. Robinett.

It is believed that presentation of these awards will be an added incen-

tive to future students in the Armor ROTC. Further, the books will serve as an excellent start to a professional military library for this year's recipients.

These fifteen institutions are well scattered throughout the United States, and Armor Officers are assigned to each institution to instruct in Armor subjects as well as to assist in those basic subjects as required leading to a Reserve Commission in



Alvin T. Wilson
Alabama Poly. Institute



Robert W. McQuarrie
University of Georgia



James G. Campbell
Clemson College



R. Frank Donaldson
Furman University



Don M. Stotser
Middle Tennessee State



Clifton J. Daugherty
The Ohio State University



Donald C. Potter
University of Illinois



Donald L. Smith
Michigan State College

1953 ARMOR ROTC Cadets

Armor. The work being accomplished by these officers is of outstanding value not only to Armor but to the Army, and appropriate recognition is due them.

The Distinguished Military Graduates whose pictures you see on these pages are tendered appointments as Second Lieutenants of Armor in the Regular Army upon graduation from their respective schools. These men are this year's fifteen recipients of

the U. S. Armor Association awards.

The engraved scrolls, properly inscribed by the President and the Secretary, the books, and the gratis membership blanks have been forwarded to the Armor Instructors at the various schools, to be awarded to the individuals at appropriate ceremonies, befitting the occasion as determined by each institution.

ARMOR salutes these gentlemen for their outstanding achievement

and welcomes them into the branch of Mobile Warfare.

It is only proper that the Instructors, as representatives of the Army and Armor, be included in the praises being handed out for their contribution to the service. Best wishes for their continued success in the molding of the characters of these young men accompany this tribute and the assurance that we are standing by to assist them in any way possible. . .



J. W. Elliott
New Mexico Institute



Allan J. Stanton
University of Arizona



Joe C. Wallace
Texas A & M



William R. Green
Oklahoma Military Academy

THOUGHTS ON ARMOR

GADED

by LOTHAR CHRISTIAN

ONE can easily understand why, from a sense of responsibility, Army planners and field commanders usually shy from the experimental and doggedly hold to the proven. However, aside from the many classical examples in the history of war, World War II especially shows the value of new ideas and the disastrous consequences that resulted from thought stagnation on the part of both Allied and Axis powers. Probably the most striking example one may present is the development and use made of armor in World War I.

In this article an attempt will be made to draw conclusions which are based both on what I experienced in combat and on what I have read and studied since the end of the war in accessible military literature. I hope that my article will contribute something to a discussion worthy of being carried on with the greatest feeling and passion, a discussion which must not neglect what is best

for the organization and training of a new army.

Importance of Armor in the Future

One frequently hears the argument that the tank has been superseded by antitank weapons, the day of decisive armored breakthroughs having passed. In answer to this, the first counterargument is the well-known, although often contested, statement that every new war begins where the preceding one ended. Early events in Korea have again substantiated this statement. World War II, however, ended with such proof of the importance of armor that every unit commander who even thought of carrying out a limited objective attack without armored forces or of conducting a successful defense without an armored reserve would have been ridiculed. Indeed, one would not be amiss in designating World War II as an *armored* war, characterized by far-reaching thrusts and counterthrusts of armored forces, during which periods of position warfare were solely intervals caused by the exhaustion of the armored forces of one or the other side. Naturally, it is not my intention to minimize the role played by aviation and the non-armored ground forces, especially the infantry, but during all crucial phases of World War II armor *carried the ball* for both friend and foe. One can safely predict that, in spite of more effective antitank weapons, resulting in a corresponding drop in

armor's potentialities, the next major war will break out with a massed armored thrust, especially if in Europe.

Even if a defensive zone could be established in which antitank weapons were so strong that every yard of ground from the North Sea to the Adriatic could be covered with fields of fire in greatest depth and every position manned at a moment's notice, the enemy would, in conjunction with airborne landings, attempt a breakthrough at a weak point. How else could he attempt to do so than with armored forces! The last war taught us that an armored breakthrough attempt, properly prepared and executed, was usually successful. Once enemy armor has obtained freedom of maneuver, how can one stop and annihilate it other than by armored counterattacks against the flanks and rear! And how can one launch a counteroffensive except with armored forces! One does not throw away rifles and machine guns just because the enemy is wearing bullet-proof nylon vests.

Antitank Weapons

During World War II—and even more so during the postwar years—antitank weapons achieved full recognition. With what types of antitank weapons will future armored forces have to contend.

First, mines are an effective means of defense. There is no disputing this fact. A classical example of the effectiveness of mines is the ill-fated

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LOTHAR CHRISTIAN, a Major in the German Army, served on Gen. Guderian's staff during the time that Guderian had over-all control of German armored troops and their training. He was also a member of the German General Staff.

It has often been stated that every new war commences where the preceding one ended. Keeping this in mind the author predicts, without minimizing the roles of the other arms, services or branches, that should war break out in Europe it will consist of a massed armored thrust. He further assumes that, regardless of new developments in antitank weapons, Armor will continue to dominate ground action if the effect of the enemy aircraft is taken into consideration in the development of Armor.

Operation ZITADELLE of 1943, in which the still-effective German armored forces were, against the advice of armored experts, led to their doom in Russian mine fields. Nevertheless, mines can seldom prevent armored breakthroughs. At best they can only slightly delay armored movements. The reasons for this are self-evident. To set up mine fields is a time-consuming process. In a war of movement there usually is sufficient time only for laying mines across roads. Moreover, gaps must always be left open, both in front of and immediately in the rear of the main line of resistance. These gaps can seldom be closed in time.

On the other hand, the development and use of mines seems to have been particularly neglected in the past. It is quite conceivable that mines might be developed in the future which, under various disguises, could be dropped by the thousands from the air to form improvised mine fields. These mines might be so constructed that after a few hours or days they are automatically neutralized, so that friendly forces can safely cross the mine fields during a subsequent counterattack. Even though today this idea may appear uneconomical to the technical expert, it might well materialize tomorrow.

Secondly, in the field of antitank guns, progress has continued in the development of recoilless rifles and rocket launchers (Panzerfaust, bazooka, and others).

A distinction must be made between the tank destroyer, namely the self-propelled antitank gun, and the towed or portable antitank weapon. As its name indicates, the tank destroyer can get the better of a tank only by means of its greater mobility and maneuverability, since the caliber and range of the tank's gun are no longer inferior to that of the tank destroyer. The last war brought out that mobility and maneuverability were more important than armament and thickness of armor, even though the emphasis on the former should not be exaggerated. The development of the tank therefore leans in the same direction as that of the self-propelled antitank gun, and it does not look as though in the foreseeable future either of these two similar weapons will achieve superiority. Towed antitank guns have been effective but can be looked upon as an auxiliary weapon. Because of lack of mobility, they are bound to disappear from equipment of a modern army.

Of great importance is the development of recoilless rifles and rocket launchers. If it ever becomes possible to fire these weapons at greater range with the accuracy of an ordinary towed gun and to provide them with maximum mobility, the tank may very well be opposed by a formidable antidote which, because of its simplicity of construction, lends itself to mass production. Too little is known of foreign developments along this line to permit a German to pass judg-

ment. It is a fact though that not only the weapon but also the steadfastness of the crew will be of decisive importance. This latter is an unknown factor which in the ponderable equation of tank versus antitank weapon must be written down in favor of the tank.

Thirdly, if armored forces are to be successful they must have air supremacy on their side. This was clearly demonstrated in World War II. On air supremacy depends whether or not armored operations can be conducted in the traditional manner along the main arteries of communication. On air supremacy depend rate of march and supply, shifting and assembling of forces, choice of terrain, and timing of an attack (day or night), depth of penetration and momentum of attack. Without air supremacy the blitzkrieg campaigns of 1939-42 would have been impossible; without air supremacy the German armored forces were doomed in Africa, Italy, and in France after the invasion.

Aside from the opponent's tanks, the air arm is presently the only deadly enemy of armor. The logical conclusion which must be drawn from this fact for the development and the tactics of armor will be discussed in Part 3 of this article.

Fourth, the question of using atomic weapons for tactical purposes remains to be clarified. American communiqués indicate that the desired objective in this has not yet been

reached. In the first instance it is specifically questionable if it would be practicable to substitute atomic for the present infantry and artillery ammunition for tactical purposes.

One can say without contradiction that no weapon has as yet been invented or developed which will definitely prevent armor from winning tactical and strategic victories. Neither has any weapon or tactic been developed as yet which could replace armor in its role of "modern cavalry," let alone one that could outdo armor in this role. The "Army with Wings" must in reality be an "armored army with wings" if it is supposed to fulfill its ground mission. Otherwise it will be fighting against hopeless odds when it is engaged by hostile armored reserves.

One may therefore predict that for the immediate future armor will continue to dominate ground action if the effect of the air arm on ground operations receives proper and timely recognition and is taken into consideration in the development of armor.

An attempt will be made to draw the necessary conclusions from what has been stated above.

The Organization and Command of a Modern Armored Force

During the last war not a single armored division existed which properly bore the name "armored." None exists today. Actually all armored divisions which have been organized to date were technically only a partial solution of this matter for they were really only motorized infantry divisions with tank nuclei. Operations that corresponded to the proper mission of an armored force could be executed only if at least one infantry battalion mounted on armored vehicles, one artillery battalion and one antitank battalion, both with self-propelled guns, were available and these elements were organized into a combat team.

A significant weakness, which in the German Army was partially attributed to the limited armament production, existed and exists even today in all foreign armies: It is the practice of combining track-laying and wheeled vehicles—two vehicular types whose speed and tactical employment differ considerably. During World War II this practice led to incidents and accidents which, though inevita-

ble, were nonetheless nonsensical. Occasionally command cars, even trucks, happened to form the advance guard or reconnaissance detachment, and the wheeled serials of an armored division were engaged in pursuing the enemy along roads and highways far ahead of the armored elements. At another time armored units would drive cross country far ahead of the armored infantry elements following on foot. This occurred whenever the track-laying vehicles did not adjust their rate of advance to that of the foot soldiers, which in turn was in violation of every tactical principle.

It was only because of their better weapons and equipment, their extensive integrating infantry with tanks, and their *esprit de corps* at all levels that these so-called armored divisions proved superior to ordinary infantry divisions. Especially in pursuit of defeated enemy forces did they perform as they should have done at all times.

During the first years of World War II the German over-all superiority and tactical expedients were instrumental in compensating for this weakness. In the Russian theater with its few highways, however, and toward the end of the war, when the Allied air superiority in the West was on the increase, the road-bound and unarmored wheeled vehicles slowed down the pace of the armored divisions. In Russia the poor roads and the continuous attacks to which columns moving along highways were subjected by partisan and regular forces repeatedly separated the track-laying from the wheeled elements of the armored divisions. Again and again the armored elements that had driven far ahead had to stop and turn about to clear their supply routes or transport wounded to the rear on their own reconnaissance cars. Every soldier who fought in the Russian theater will remember this system!

The question of air superiority also deserves searching consideration. If one assumes that both opponents have air forces of equal striking power, one may say that normal movements and regular supply traffic along roads cannot be assured by day or night. Nor will this situation be improved by attaching more antiaircraft units to the divisions. Unavoidable halts along the roads will result in the piling up of vehicles at defiles, road junctions,

bridges, and inhabited localities. This will repeatedly offer remunerative targets for air attacks, even from the highest altitude. If the enemy obtains air superiority, his air arm can almost completely interdict any traffic on roads.

In view of these facts and the deficiencies in the tactical field mentioned previously, one arrives at the following conclusion:

Armored formations (armored divisions, armored corps, etc.) must be equipped exclusively with armored self-propelled track-laying vehicles. This pertains to reconnaissance as well as to supply vehicles and ambulances. In this manner the armored unit will not be restricted to roads and will be invulnerable to both air and ground attacks (flank attacks, cutting off of supply routes, partisan raids, etc.). Moreover, the armored formation will be a tactical unit which can launch an attack with a powerful punch.

For the planner of an operation, this will mean that armored thrusts will no longer be bound to roads and highways, but can be directed toward the objective across any terrain that is most favorable from a tactical standpoint. To discuss the tactical and logistical problems involved in such operations would go beyond the scope of this article. However, these problems have already been solved in a practical way in North Africa and Southern Russia, and the solutions can be adapted to differing conditions in other theaters of operation.

It is commonly accepted that protection against air attacks demands extensive distribution of antiaircraft guns on self-propelled mounts. As to armor's cooperation with tactical air support units, on which the success or failure of armored operations depends, the procedure that should be adopted needs clarification. The system introduced by the Wehrmacht, consisting of two parallel organizations that complemented one another and cooperated via the Luftwaffe liaison officer, was flexible, but often was not capable of dealing with sudden changes in the situation. Jurisdictional conflicts, air attacks on German ground troops, faulty communications, and delays in support missions, occurred only too often. To eliminate this problem the armored commander, in stating his point of view, must

formulate a demand which will no doubt be criticized by all members of the air force: The commander of an armored force must have control over his own tactical air support, just as the commander of a naval force controls his own tactical air based on carriers. Control over his own tactical air support will guarantee the commander of an armored force adequate battle reconnaissance to his front and flanks, giving him a real weapon of opportunity, and providing him with essential air cover. The speed of modern planes will allow the establishment of airfields at sufficient distance from the battle area, while guaranteeing the timely commitment of air support. This arrangement presupposes that the commander of an armored force will be trained not only in ground but also in air support tactics. In addition, the commander of his air support unit will act as advisor. It is self-evident that the strategic air force will continue to exist as an independent arm at the disposal of the theater and top-level commanders.

Since these added responsibilities will place a heavier burden on the commander of such a combined force, ways must be found to simplify his other duties. This can be achieved above all by excluding all non-combat elements from his force, streamlining the organizational structure, reducing the size of his force, and simplifying the supply system. These organizational simplifications are also necessary to adapt armored forces to future operations that will probably take place at an even faster pace and over wider areas than in the past.

There are various means of accomplishing the above:

By reducing the combat strength of the armored infantry elements, that is, by eliminating some of the riflemen who are usually little more than "cannon fodder" or replacements during an attack.

By assembling the supply elements within supply companies at battalion or regimental level, thus saving manpower and vehicles while simplifying supply.

By reducing the number of armored support units within the armored division; for example, by reducing armored infantry to one regiment, armored artillery to one battalion, and as a last resort by dropping the antitank guns, etc., in favor of having a tank nucleus of at least 300 vehicles.

By organizing artillery divisions, independent assault gun and antitank regiments, etc., for commitment at points of main effort.

By employing armored divisions exclusively within the framework of armored corps. Armored divisions should no longer be committed individually, even less as armored combat teams, emergency reserves, or as isolated stays supporting an infantry front.

These suggestions are far from new. The German Army was unable to introduce these measures because of increasing personnel and material difficulties toward the end of the war. However, one need but take a look at the organization of the Soviet armored forces, as they existed at the end of the war and no doubt exist today, to realize to what extent and with how much speed the Soviets learned from their experience in World War II.

A Soviet mechanized army consists of two armored and one or two mechanized divisions. Directly subordinate to such an army are: one antiaircraft division, one artillery brigade, one rocket launcher, one engineer, and one signal regiment, a reserve force of regimental or battalion strength, and rear area service units. No corps headquarters are "sandwiched" in; on the other hand, the army compares in strength with German corps. The armored divisions consist of two tank regiments, one motorized rifle, one mortar, and one antiaircraft regiment, one artillery, one rocket launcher, one armored reconnaissance, one signal, and one engineer battalion, as well as service units. In addition to the antiaircraft regiment, each of the other regiments has also a flak company.

The high proportion of antiaircraft units shows that the Soviet High Command is air-attack conscious and has attempted to protect its units accordingly. The Germans had occasion to observe the rigid concentration of all service and supply units for the purpose of increasing striking power.

Noteworthy is the meager proportion of artillery in favor of infantry heavy weapons (one mortar regiment and one rocket launcher battalion) and the concentration of fire power in the artillery corps, antiaircraft division, antitank gun brigade, etc.

From this brief outline of Russian Army organization can be recognized

the tactical principles according to which the Soviet High Command intends to fight. We Germans fully realized the validity of these principles but were unable to put theory into practice. The Russian principles may be summarized as follows:

To organize comparatively small but very homogeneous and powerful armored units with the main emphasis on tank strength. (The Russian armored division with about 10,000 men in contrast to the roughly 20,000 men of the former German armored division, with practically twice as many tanks! This organization guarantees maximum flexibility.)

To concentrate and mass all tanks and guns to make the main effort at the decisive point.

To keep a tight rein on all units, especially the artillery and antitank guns, by subordinating the latter directly to the army commanders, thereby relieving commanders from division on down of this responsibility.

Observe the principles of mass and economy of force! In short: "Boot 'em, don't spatter 'em!"*

During World War II it became customary in the German Army—primarily because Hitler dispensed with the older and experienced commanders and general staff officers—to command as little as possible and to delegate responsibility as far down as possible. This led to young company and battalion commanders, some of them twenty-two or twenty-three years old, commanding combat groups that consisted of a great variety of auxiliary weapons which they could not master technically and tactically. Wholesale scattering of forces and many errors in leadership were the usual result, especially since the company commander was also responsible for the supply of ammunition, fuel, and rations.

The armored unit of the future must be a rapidly moving "porcupine," able to negotiate all terrain, to attack with the speed of lightning, and, if necessary, to disappear cross country with equal speed—a force which is both capable of protecting itself in all directions, even from above, by means of reconnaissance and fire power and of operating independently over wide areas.

*This is Constantine Fitzgibbon's translation of Guderian's "Klotzen, nicht Kleckern!" (General Heinz Guderian, *Panzer Leader*, p. 106.)

Sum & Substance

A regular feature in ARMOR, where you may express your views in approximately 500 choice words—the effective medium between the letter and the article. This section is open to all on any subject within the bounds of propriety. Name and address must accompany all submissions. Name will be withheld upon request. No pseudonyms.

As has been stated on many occasions the art of mobile warfare ensconces many elements. It isn't limited to Armor alone. There are Self-propelled Artillery units, Mounted Infantry units, Armored Engineers, etc. For an appraisal of the Antiaircraft Artillery, ARMOR has turned to the 3d Antiaircraft Artillery Automatic Weapons Battalion (self-propelled) stationed in Korea. As the name implies the primary mission of this type of Antiaircraft unit is to provide antiaircraft defense against high speed enemy aircraft. However, the static conditions in Korea have taxed the American ingenuity once again. The Battalion Commander and Company Commanders of the 3d Battalion speak out on direct support of Infantry units with their antiaircraft weapons. It is well to note the emphasis they place on preventive maintenance which is covered elsewhere in these pages by the Commanding General of The Armored Center. The maintenance is stressed even though we are in a relatively static position in Korea.—THE EDITOR.

The writer of the following has eighteen years of commissioned service in Antiaircraft Artillery. During World War II he served as a gunnery officer on an Army transport in the Pacific, later with an AA unit in Europe. Subsequent to the war he organized the 74th Constabulary Squadron. After a tour of duty as a National Guard Instructor he was assigned to Korea and has commanded the 3d AAA AW Battalion (SP) since May 1952.

When I took command of the 3d AAA AW Battalion (SP), I realized that once again I was confronted with the same thing that has proved to be one of my major problems throughout eighteen years of Army experience, all of which has been as an officer in some type of antiaircraft work. This same problem, I encountered in the tropical heat of Panama, severe winters of Europe, and the salt air of the Pacific while I was gunnery officer on a USAT. I knew that here in Korea I would again direct twenty-five per cent of my attention to the problem of maintenance.

Our big job here has been to give direct and close support to the Infantry in their ground movements. This necessitated a lot of moving around to different positions on the MLR so that we could fire. It is logical that if the engines that move a self-propelled weapon cannot get the weapon where it is needed, the weapon is useless. The actual firing

of an AAA weapon is simple compared to the complications of keeping not only the weapon, but its means of mobility, in operating condition.

There are two big obstacles that we have faced: timely supply of spare parts, and obtaining personnel sufficiently trained in their MOS jobs. The supply problem can be accredited

thousand miles of transportation kept us from having. At times we were almost to the point of being unoperational. In a self-propelled outfit where about 127 vehicles are operated, requiring 400 storage batteries, a battery charger is a critical item. During that period it was practically impossible to get new batteries. At the present time we need simple items such as fan belts for our 2½ ton trucks, but the battery shortage was perhaps the most critical shortage of any item we have had.

Concerning the trained personnel problem, rotation has been the prime headache. We get new men, most of them fresh from basic training, and by the time they become efficient in their jobs, they go home on rotation. This is true with officers as well as enlisted men. If we could get officers and men who *know* their MOS jobs, our problem of staying ready to shoot would be very much simplified.

With the stable MLR we've had so far, the tactical employment of the battalion has been pretty well cut and dried. Our primary mission is to defend the division against enemy aircraft, but our secondary mission, to support the ground movements of the Infantry, has constituted all of the shooting.

Each of our tracks has direct communications with the Artillery liaison officer at the Infantry battalion. Our fire is requested by the Artillery forward observer, with the Infantry through the liaison officer, and ad-



Lt. Col. Moomaw

to the distance that parts must come from the factories to the front. In most cases it's not *specific* items we need, but *more* of everything. There was one exception to this that I remember very clearly. From July of 1952 to January of 1953 we needed a battery charger. This is a simple piece of machinery that you can find in every garage and gas station in the states, but something that six

justed by the forward observer. This direct dealing with the Infantry cuts down on the delay that would be caused if all fire missions had to go through our battalion operations. Those doughboys love to see our weapons roll up to a cut-a-way or revetment on the MLR . . . and they love the sound of our 40mms and 50 calibers going over their heads. A few 40s on a bunker or machine gun emplacement will drive the enemy out, then we can mow them down with our quad fifties.

My relations with the Infantry have been very pleasant. They have always been ready to feed and supply the squads that are attached to them. They have been very obliging with their gasoline and POL. In turn, we give them the kind of close support that they want, the kind that no other type outfit can give, and they appreciate it!

The supply of food and clothing in Korea has been superior. There has not been one time since I took command of the battalion that we were wanting for essential items of Quartermaster issue. They have done a marvelous job.

As a result of excellent Engineer support, my men are protected on the MLR by sandbagged bunkers. Accessible roads to most sectors of the line reduce the problem of getting their supplies to them.

I believe that the Army in Korea today has reached an almost desired peak in military discipline and training. I know we have here in the 3d AAA AW Bn. I feel confident that if the enemy makes an offensive push employing his tactical aircraft we will be ready for him. We have a sizable stockpile of ammunition, and we're ready to use it where it's needed, be it in support of the Infantry on the ground, or against Red MIGs.

Lt. COL OTHA MOOMAW

♦ ♦ ♦

The writer of the following served as an enlisted man during World War II. He was wounded in 1944 in Northern France. Receiving his commission at Utah State University in 1949, he presently commands A Battery, of the 3d AAA AW Battalion (SP) in Korea.

I was lucky when I took over A

Battery. It was functioning beautifully, and it can be most reassuring to know you are stepping into a well-ordered spot. As a platoon commander an officer learns his two weapons, the 40mm cannon and .50 caliber machine gun. He becomes familiar with the M16, M19 and M39. As a battery executive he knows tactics, supply and communications and then too, he picks up a fair share of paper work. However, he doesn't know what a headache is until he attempts to put all these together and run a battery in the field.

Take maintenance. In this so-called stale-war, where movement is no longer the order of the day, maintenance would seem no longer a problem. It isn't so. It isn't so because



Lt. Giertsen

a commander of a self-propelled unit cannot—save at the risk of disaster—afford to neglect his vehicles. He has to depend on his vehicles to get his weapons to where they are needed. Further, he must rely on his vehicles to remove his weapons and crews to safety when they are endangered. He must bear in mind that the war could change overnight from a static situation to a very fluid one. With a fast moving war suddenly on, he would hardly have time to look to his maintenance. He would have to utilize all available time pursuing his defensive or offensive role. Although the role his battery will play is usually delegated him by the infantry commander, in the final analysis, it is *his* battery. Its success will be measured by the manner in which

he keeps it supplied, trained and supervised. Bearing in mind that his weapons have been mounted on movable platforms for a purpose, and that without that mobility they lose a great part of their efficiency and potential, he cannot help but feel that that mobility is something to be safeguarded at any expense short of actual neglect of his weapons when not engaged in his mission.

Aside from mobility, there is yet another factor which makes you aware of the necessity for constant, exacting maintenance. With the four batteries of the battalion supporting an entire division plus assigned units such as the Division Artillery, Light Aviation Section (in the AAA role), each battery is called upon to extend itself over an almost unbelievable amount of territory. Supplies and ammunition must be transported by either the M39 (armored utility vehicle) or by jeep, and vehicles must rely on roads. In one situation the bumpy, dusty road which leads from one extreme of the battery's zone of responsibility to the other, it is about *seven miles*. From the Battery Command Post to either end of the battery line it is over four miles of the most rutted, winding, hilly roads that ever caused a battery commander nightmares.

Each day creates new employment for the vehicles. There are chow runs, supplies to be delivered, ammunition to be restocked, gasoline and oil to be replenished. There are mail runs, inspection trips, and trips for a score of incidental reasons. Seldom a day goes by when some vehicle is not moved back for checks, adjustments or tactical reasons.

For all of its stagnant characteristics, the Korean fighting offers the self-propelled battery commander real tactical challenges. It is a slow-grinding school of hard knocks in which he learns his maintenance at the expense of many headaches. He discovers, for instance, that when an M19 simply cannot generate the power required to negotiate a certain hill in low-low, and when no amount of turning the air blue with colorful English has served to get it up there, there is but one thing left to do—back it up in reverse.

More than one B.C. has become a road construction engineer on short notice. If the situation calls for a

track to fire on some specific target, and the only position from which that fire may be delivered is inaccessible, does he chuck the whole thing with a "nice try, old chap"? Hardly—He finds himself a tankdozer and makes a road to the position. It is a happy commander who sees his track negotiate a difficult, make-shift road without throwing a track or becoming "high-centered" (the vehicle's belly lifted on a high spot while the treads grind helplessly in the air).

The gasoline and oil consumption is another major headache for the self-propelled battery commander. With an M19 getting perhaps one mile per gallon over the stubborn terrain, and an M16 squeezing to get two to three, he isn't exactly wallowing in spare gasoline. He must learn—and practice religiously—fuel conservation. However, he finds the necessary gas, and gets his tracks where they can deliver the fire the infantry wants. Somehow he manages to keep all his vehicles running, and somehow—despite the headaches and heartburn the job causes him—he knows he wouldn't trade jobs with anyone else!

1ST LT. ROLF GIERTSEN

♦ ♦ ♦

The writer of the following served as an enlisted man in Europe during World War II, participating in campaigns from Africa to and including the Battle of the Bulge. Receiving his commission from Officers Candidate School in 1949 he presently commands B Battery of the 3rd AAA AW Battalion (SP) in Korea.

Tactically speaking, the problems of the Automatic Weapons Self-Propelled Battery Commander in the ground role are the same which cause the Infantry Commander to pull his hair. What affects the one necessarily affects the other, for their jobs are one and the same: to insure that the infantry gets to its objective, executes its mission, and returns, with a minimum of effort, time and casualties.

The battery commander's mission, to support the infantry with his fire, is simple in theory. In practice, however, it is quite a different matter. To



Capt. Mattas

begin with, there is the small but necessary business of deciding how to support the foot soldier. There is the matter of what type of fire would be best, and from where that fire can best be delivered. The latter point in turn gives rise to other problems: Will the terrain offer adequate protection to the gunners and their weapon? Is it readily accessible? Can it be resupplied quickly? Can it be resupplied in quantity? Can it be resupplied under fire? Is there an adequate route of withdrawal in case the position becomes untenable? These questions the battery commander must ask himself before he is ready to commit his men and equipment. They are, of course, questions which the infantry commander must also ask himself. However, the AW Self-Propelled commander, in considering his final decision, must think not only in terms of his men, but in terms of those whom he is to support. The decision he finally reaches may well put his hair on end. I know one B.C. who sent one of his M-16s into position in a bare, flat field in the Kumwha area, nearly 300 yards ahead of the closest infantry. It was a difficult decision to reach, but which had to be made if the infantrymen were to receive the support they needed. The half-track stayed out for three days, protected only by a handful of infantry during the night. It was pestered by mortars, artillery and small arms fire, but in turn it cleaned house with a respectable number of Chinese citizens, and returned with a full crew. It's just one of those cases where the job is remembered

by another grey hair on the B.C.'s head.

It is also a case which should forcibly bring to the attention of all potential AW (SP) battery commanders a most important lesson; a lesson which, if not learned from observation, may one day be learned at the expense of lives and equipment—*his own men's lives and his equipment!* Yet the lesson is simple. It can be summed up in only four words: *Train your squad leaders.*

In Korea—where the distance between two tracks is often measured in thousands of yards; where a single weapon may find itself atop a bare hill, cut off and forced to fight with the infantry as the enemy calls the shots—there will be times when the success or failure of a mission will hinge upon the judgment of the squad leader in charge of the track; when the lives of uncounted infantrymen—to say nothing of the track's crew—may depend on the actions of a single noncommissioned officer, alone for the first time, without means of communicating with his superiors, and with less hope of relief. If you have trained him as you should, chances are he'll live to have you pin a medal on him. If you have not—you can blame *yourself* not him, for the men that died.

I say that your squad leader is the key man in your organization. He is the man who can tell you that the left gun barrel on his M-19 is worn. He knows that the second gear on his M-16 is going bad, that his track can't be moved into its alternate position except in reverse and that kicking the left front tire twice will start the motor. But it isn't enough that he knows how to make decisions—he must *get used* to making decisions. In the close-support-of-the-infantry concept as played in Korea, the M-19 or M-16 is no longer a component of a large, smoothly coordinated team—it is the team. In the fast moving ground situation the squad leader is no longer a minor commander dedicated to a subordinate role. In that moment when troops are moving and clashing scant yards before his weapons, when artillery and mortars have severed his communications, his line-of-sight radio is useless and he is handed a fire mission—he is *the* commander. What he does with the terrifying power of his quad-fifties

or his twin forty millimeter guns, may well spell victory or defeat for the people whom he has been told to support. There is the real test of the battery commander. By the actions of the leader of one track he will know what kind of job he, the B.C., has done.

There are many ways in which the self-propelled automatic weapons can assist the infantry. One frequently employed trick is to "walk" a patrol home. Often, when a patrol turns back, it discovers that a force has followed it or has laid an ambush along the route it must take. In such cases, the patrol leader may call for a "walk home." The supporting weapons will then place their fires either in front or behind or even literally box in the patrol with their fires. In this manner the AA units will continue to follow the men, maintaining the same relative position until the patrol is out of danger. Another use for the AAA AW weapons is to fire against bunkers and crew-served weapons. The M-19 with its twin 40s, capable of delivering 220 rounds per minute, is particularly suited for those pin-point targets where shocking power is needed. The M-16, on

the other hand, is particularly good against exposed troops or lightly armored vehicles. Because of its rapid traverse and elevation, the quad-mount atop the M-16 is capable of shifting fire with incredible speed. Amazingly enough, however, it is for its tremendous volume of dispersal of fire, rather than for its maneuverability, that the quad-mount is liked in Korea. Anyone with the slightest conception of a beaten zone can appreciate the job of area sweeping *four* such zones. In one 40-day period of routine activity along a relatively quiet front, recently, our quads and forties were credited with the following: five machine gun nests, twenty-five bunkers damaged, one propaganda unit silenced, eighteen enemy killed and forty wounded. It was like high-powered sniping.

The skeptics who once laughed at the thought of close support of the infantry by AAA AW Self-Propelled Weapons might feel just the least bit foolish at seeing those very weapons performing their near-miracles of fire-support from positions tankers in their five-inch hulls might hesitate to take. The crews in their scantily protected tubs slug it out with the

enemy, giving double everything they take. Personally, I would like to see more and heavier armor on those tracks for the protection of the men, I would like to see a longer burning tracer—say one that went to 7200 instead of the 3500-4200 yards we now get. There are a lot of things I would like to see, but I like very much what I see now.

CAPT. JOHN A. MATTAS

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The writer of the following received his commission from Virginia Polytechnic Institute in 1939. During World War II he served in Europe, participating in the invasion of Normandy. He presently commands C Battery of the 3rd AAA AW Battalion (SP) in Korea.

No single fact—save perhaps the terrifying spectacle of its firepower—strikes an observer so forcibly when first witnessing the weapons of the AAA AW Self-Propelled battery in action as does the sudden realization that these vehicles, so capable of destruction, are themselves so suscepti-



A composite United Nations Automatic weapons crew load up to fire against the enemy line in support of the Infantry.
ARMOR—May-June, 1953

ble to being completely destroyed.

For weapons which may be called upon to deliver direct fire from positions in full view of the enemy, neither the M-16 half-track, nor the M-19 full-track are adequately armored. Their sides, and the "tubs" in which the guns are set, are of a mere ¼ to ½ inch armor plating, and have no overhead protection at all.

The truth is that up to now they have been considered only as mobile, gun-bearing platforms, with little thought given to how the men who serve them will be protected from enemy ground fire. Both the M-16 and the M-19 were designed for AAA defense against fast flying aircraft. Their thin skins were considered adequate against bomb fragments which they are. They were *not* designed for the close support role which they are presently playing in Korea. Obviously, then, though their armament may be magnificently suited for that close support role, their armor is certainly not. Certain measures and field innovations have been found necessary for their protection and that of their crews. These for the most part have been born right in the field, mothered by experience and fathered by the aggressive spirit of the crews and their commanders.

The first and most inevitable, of course, was digging in. Whenever time and terrain permit, the vehicles are backed into a revetment—preferably on high, commanding ground—with only the gun tub visible above ground. From such a position both the M-19 with its quad forty millimeter guns, and the M-16 with its fifty caliber quadruple gun mount, can deliver fire around a full 360 degrees. In cases where enemy mortar and artillery fire is likely to be heavy, the position is covered with logs and earth, converting it into a huge bunker which remains open to the rear, but permits only the guns to be exposed to the enemy's line of fire. Such bunkers have proven capable of withstanding virtually any amount of anything the enemy may fire. Should it become necessary to employ a wider field of fire or should the enemy threaten from the air, there is always an alternate position which has no overhead obstruction. Thus, the crew is ready for any situation which may arise.

For tracks operating in the open,

additional protection may be in the form of the broader, heavier shields which are hinged to the sides of the M-55 gun-mount. These can be made quickly and easily with available facilities in the battalion motor pool. The protection, both physical and psychological, which they give the gunners is beyond evaluation.

Each crewman is also afforded some measure of protection from fragments by the helmet and armor vest he wears. The vest might well be considered part of the vehicle's armament, for every man is required and trained to wear it in any area forward of battalion headquarters.

Thus, with such simple precautions, it is possible for field commanders to overcome the lack of armor which once made the M-19 and M-16



Capt. Magill

"rolling coffins." Today, the number of casualties caused by enemy return fire, either direct or indirect, can be said to be truly small. Damage to the vehicles is negligible, and is almost invariably caused when the vehicle is caught in the open.

Turning from armor to armament, most automatic weapons battery commanders feel that the guns are perfectly suited for the concept of close support of the infantry. The quadruple fifties, with their tremendous "spraying" effect, can blanket large areas inflicting heavy casualties on masses of troops. The rule which says they should be used in ranges from 50 to 1000 yards is not generally broken, but it is sometimes badly bent. Their range may be anywhere from 25 to 4000 yards. The job

may be repelling an attack at close quarters or delivering harassing fire into an enemy staging area. They'll do both jobs—and do them well. Normally, one tracer in five is used, and most fire adjustment is done by tracer.

The forties are perfect for direct fire where "punch" is required. Ammunition supply is adequate for both weapons. Each vehicle constantly maintains a basic load. One thing most battery commanders in this battalion would like to have is a longer tracer. The present 3500 yard tracer burnout point is all right, and at this relatively high altitude the Mk 2 tracers, finding less resistance, will generally cover 4000 to 4200 yards before burning out. However, having had an opportunity to fire the British Mk 27 tracer, with its 7200 yard burnout point, most of the battery officers agree that it is just what we need. The added yardage could well boost the weapon's efficiency anywhere from 35 to 50 percent, by allowing the gunners longer observation.

Normal targets for these forties are bunkers, crew-served weapons and concentrations. One battery, on Kelly Hill last September, played a cat and mouse game with a group of Chinese. It was noticed that each time planes started a run the Chinese would disappear into a trench and run across a ridge, under cover, and onto Cavite Hill. When the planes had completed their mission, they would simply run into the trench and across to Kelly again, where they were ready to meet our advancing troops. The last time they tried it, we pounded the trench to pieces with HE shells. When they tried to get up Kelly again, they had to expose themselves and we simply blew them to pieces. More than fifteen of them were knocked sprawling down the hill.

This is not unusual. It is what the infantry expects us to do—and we oblige them as often as we can. The result of it is that the doughboys have to rely heavily upon us and they respect the capabilities of the AAA automatic weapons battery in the close support role. It is a support to which they are entitled, and which we intend to give them as often, as accurately and as speedily as we can.

CAPT. WALTER B. MAGILL

The writer of the following served as a commissioned bombardier navigator in the Air Force during World War II. He instructed American and Chinese cadets at Carlsbad, New Mexico. Transferring to the Anti-aircraft Artillery after the war, he presently commands D Battery of the 3rd AAA AW Battalion (SP) in Korea.

Dog Battery, as part of the 3d AAA AW (SP) Battalion, has a lot of history to uphold. Since the invasion of Southern France, it has been a part of the 3d Division almost continuously. The battalion landed on Beaches Red and Yellow, giving its parent organization antiaircraft protection. Together, the two 3ds made history in World War II.

Now, a new conflict finds it supporting the Rock of the Marne once again. But this time, the support is of a different nature—radically different. Since our landing at Wonson, in November 1950, we have come to learn the meaning of "surface mission" and "close support of the infantry." Those words were merely half-tried theories before Korea came along.

Initially we had come prepared for air defense role. A scarcity of enemy aircraft plus an over-abundance of enemy infantry soon changed the mission, and with it, many former concepts, plans, and procedures of operation.

One of the first things we had to learn was the degree of adaptability of our antiaircraft weapons, the dual forty millimeter guns and quadruple fifty caliber machine guns, to the then almost untested close support role. In the initial stages of the war, at Chin Hung-Ni and Huksuri; in support of Task Force Dog, whose mission it was to relieve the pressure on the Marines at the Chosin Reservoir along the withdrawal route and around Pusan, the guns proved their worth.

But the guns were not the only ones on trial. The vehicles which bear the guns were put to difficult tests. Many said the vehicles would not bear up under the constant movement; that parts would fail; that their armor was too light to permit them to slug it out against ground forces. But where the machine is hard put, the knowledge and deter-

mination of the man behind it must find its way into the picture. Thus, gunners became armorers, drivers became mechanics, and mechanics became inventors, and the machines kept going.

Today the ground support concept is safe. Ways have been found to give the doughboys better, quicker and closer support. Additional uses have been found for the guns. Selection of targets has been brought nearer to perfection. All in all, constant examination of experience and its application to practice has seen a drastic curtailment of friendly casualties, while those of the enemy soar. But the problems are not over.

The problems of today are no longer peculiar to the concept; they



Lt. O'Rourke

are peculiar to the sort of war we face in Korea today. They are, for the most part, problems of supply, administration, and training.

Fuel is one of these. In the rugged Korean terrain of steep mountains and eternally hilly countryside, an M19, with its twin 120hp Cadillac engines, does well to travel one mile on one gallon of high grade gasoline per engine. If an M16 can go 2.5 to 3 miles to each gallon it is doing well.

While on the subject of vehicles, let me say that a lack of experienced mechanics, not spare parts, more often causes vehicles to be deadlines. There are schools, in and out of Korea, to which a man may be sent for mechanical training. However, there are few experienced men who can help the novice make the diffi-

cult transition from book learning to practical application. This problem has been partially combatted by holding frequent maintenance classes for drivers in the battalion motor pool. In these classes, first echelon work is stressed, with an eye towards preventing breakdowns. But why such a shortage of trained men? The answer is simple and can be given in one word: *Rotation*. It is the same problem whether with drivers, mechanics, armorers or gunners. It takes so many months to train a man to do his job well. Then he is ready to lead. When he has learned to lead, he is ready to teach. Unfortunately—for the commander, at least—by that time he is also ready to rotate home. The outfit must settle for another rookie, and the process is ready to start again.

No, I am *not* against rotation. Nobody who has to serve in Korea is against rotation. I don't know *what* the answer is—and I don't believe, that at the present time anyone else does, either.

One partial remedy, born of experience, has been to have a short-timer "little brother" a new man through the job. For example, a man who is destined to become a driver of an M19 will probably first serve an apprenticeship in the assistant driver's spot.

The same situation exists with officers. Battery grade officers with antiaircraft automatic weapons experience are hard to come by. Many gun-trained officers in key positions within the battalion have had to learn the automatic weapons, and tactics as they went along.

Recently there has been a marked increase of school-trained AAA AW (Self-Propelled) officers, most of them recent graduates of the school at Fort Bliss. They come fresh, with new ideas, and are a most welcome sight. These are some of the problems which will probably be encountered by officers coming to command platoons, batteries or battalions of Automatic Weapons in (SP) in Korea.

Are they worth the trouble? Well, ask the guy who gives us the missions. Ask the infantryman. I think his answer will be a big, loud "Yes—they're worth it!"

Personally I think they are, too.
1st Lt. JOHN MICHAEL O'ROURKE

Command Responsibility for PM—HOW?

by MAJOR GENERAL JOHN H. COLLIER

WHEN General Heinz Guderian first suggested to the German General Staff that mechanized equipment be employed in a combat role he was sharply rebuked. It was then the common belief of the German General Staff that motorized elements were only of value in a service support role, hauling beans, flour and forage to combat troops. But that was 1924.

Twenty-nine years, including a first rate war and a not-to-be-sneezed-at police action, have taught us that without the combat use of mechanized equipment, military operations today have no hope for success. You and I know that combat is not done entirely by machines, important as they are, even though our so-called advanced thinkers of the comic books continue to speak of push button warfare. Should that technological dream ever come true, I can assure you that a horde of technicians will be kept very busy doing preventive maintenance to keep the push button working.

But to return to the mundane present, we all recognize that our vast array of military machinery is of little value unless it is kept operating effectively—and that requires PM—plenty of preventive maintenance that must be stressed at every echelon of command.

Last year it was my pleasure to sponsor a class such as yours here at

Aberdeen. My remarks at that time were directed to what I consider to be the key to effective preventive maintenance—command responsibility. Today I am more firmly convinced than ever that good preventive maintenance can only be had when every commander, from Corporal through General recognizes that he has the prime responsibility for preventive maintenance within his command. The very fact that each of you has left your busy everyday tasks to concentrate for a few days on the importance of PM convinces me that you sincerely believe preventive maintenance is your responsibility. Therefore, I have decided to expand on my remarks of a year ago and attempt to answer a question that I frequently hear, "How can I discharge my responsibility for preventive maintenance?"

My answer to that question will be a framework only. That framework will be filled in by the course you are now beginning.

As Commandant of the Armored School, I would set a very poor example here at the Ordnance School if I did not follow the well-known pedagogical precept that you will see so well demonstrated in your course here, that is, for a speaker to tell what he is going to say, say what he has to say, and then tell what he has said. And I might add that I shall also attempt to be guided by that famed ecclesiastical advice to a young clergyman—that few souls are saved after the first twenty minutes.

I intend to stress seven simple actions that commanders can take to insure effective PM. They are:

1. Use the chain of command.
2. Require effective status reports

that show the results of completed staff action—not fire alarm reports that require time consuming investigation before command action can be taken.

3. Don't let subordinate commanders pass the buck to technicians.
4. Insist that training and PM go hand-in-hand.
5. Encourage initiative and enthusiasm for PM by every echelon.
6. Require that *all* command and staff visits practice the principle of instructor-inspector service of which you will hear so much.
7. Finally, take effective, timely command action to include such things as providing or requesting technical help if required, condemnation for the incompetent, or, of course, praiseworthy recognition where deserved.

Now let us consider these points.

First, the chain of command is the only effective means to build and hold together good preventive maintenance. Far too frequently I have observed junior officers and NCO's who appear utterly ignorant of what is meant by the chain of command. Some of this ignorance has come about because of concepts that were allowed to develop during World War II when experienced leaders found themselves with green troops and green junior leaders. The easy way out of the dilemma at that time seemed to be over-centralized control from the top. Battalion and regimental commanders found themselves directing minor administrative details that should have been taken care of by company commanders. Perhaps

MAJOR GENERAL J. H. COLLIER, the Commanding General of The Armored Center and Commandant of The Armored School, Fort Knox, Kentucky, has been intimately connected with Armor since 1941. This article is based on his recent address at The Ordnance School, Aberdeen Proving Ground, Maryland.

you remember company commanders who never learned to supervise a supply room or operate a mess because they knew the Colonel would do it. That attitude of passing the buck up permeated all levels of command until now we find Corporals and Sergeants who look on their stripes solely as a mark of increased pay and privilege. Few know them as a badge of increased responsibility. By our every action, you and I must eradicate these ill founded concepts and restore the inspired feeling of responsibility in our noncoms and junior officers. See that they recognize that the prestige of leadership goes *only* to those who know that responsibility is the first quality of leadership.

That deep sense of responsibility, coupled with initiative, form the lines in the chain of command. The necessity for assuming and carrying out responsibilities goes all the way up and all the way down the chain of command. A company commander who by-passes his platoon leader by dealing directly with squad or section leaders, or crew or tank commanders, violates not only the principle of the chain of command, but he does an injustice to the platoon leader. If this is done because the platoon leader is incompetent, let's relieve him. Only by the full use of the chain of command can any military activity be assured of success. This principle is not confined to the military, it is used in all successful undertakings involving groups of people, civilian or military. It is just as great an obligation that one's subordinates be required to know and assume their responsibilities and carry them out as it is to know, assume and carry out one's own responsibilities.

My second point—require meaningful equipment status reports that indicate clearly the *need for* and *extent of* corrective action. Reports coming to you that half the radios are out; that meals can't be prepared because the stoves don't work; or that men are falling out of a march column with sore feet due to poorly fitting or worn out shoes, tell you only one thing—that a crisis has developed. To take action, you as a commander must find out *what* went wrong, and *why*; *how* the trouble can be corrected; *who* is taking ef-



The Commander uses a PA system to instruct trainees in crew PM at Fort Knox. U.S. Army

fective action, and *when* it will be completed. Getting the answers to these questions is a difficult and time-consuming job that increases in complexity as you rise to higher command and staff levels. Until these simple questions can be answered your hands are tied and you as a commander or staff officer cannot take effective action. Make it SOP that deadline and critical status reports give all the facts required for corrective action. Speaking of reports, it might be well at this time to set straight a widely held misconception. Maintenance and supply reports should not be mere paper work or red tape. Such reports should be based on the need to transmit facts to the person who must know them. Facts can be transmitted orally in many cases. When written reports are required, they must be devised to show necessary essentials with a minimum of administrative effort. Paradoxical as it may seem, I must here warn you to beware of PM—the initials this time meaning *pencil maintenance*. That is the enemy of real preventive maintenance. Preventive maintenance is hard work with equipment, tools and supplies. It is not fancy paper work embellished with meaningless red tape.

Commanders and staff officers who require substantiated reports of maintenance and supply difficulties will stop some of the so-called *snow jobs* that are frequently thrown at senior visitors. As you know, many officers and men seem to be obsessed with an overwhelming desire to tell *something* to staff visitors, even though their comments are based on vague rumor. Perhaps I can best illustrate

my point by recalling an incident that occurred only two or three years ago when I was with the U. S. Constabulary in Germany. During a large scale maneuver a senior General officer came upon some tanks out of action along a road. As the story later was reconstructed, it appears that one of the noncoms with the tanks reported that the failure of fan belts had put the tanks out of action. That's when the Sergeant should have shut up. But no, he volunteered the information that fan belts were critically short throughout the theater and many units had deadlined tanks as a result.

This one unconfirmed report led to frantic action at all levels of command. Commanders and staff officers were rushed, ill prepared, to conferences without knowing the subject for discussion. Priority telegraphic requests demanded *blitz* reports of deadlined tanks and stockage of the required fan belts. Special *red ball* requisitioning procedures were prescribed. Arrangements were made to air lift fan belts.

When the hassle had been under way for nearly two weeks it was learned that nearly 3,000 fan belts were on hand in a nearby depot and most units had some on hand, although the outfit with the deadlined tanks had neglected to determine their requirements or requisition the fan belts.

What can we learn from this little story? That unconfirmed fire alarm reports result in untold expense in time and money to dig down to the real facts.

Previously I stated that my talk would be only a framework upon

which commanders could build effectively the body of their responsibility for PM. At this time I would like to illustrate my point by going into a little detail on the subject of deadline reports. That subject has received far too much of the *broad brush* treatment already and it needs some careful examination.

As I have already mentioned, the mere paper work will accomplish nothing. It should be used as an administrative tool to get the maximum equipment in operation. To do that requires that each echelon process the report promptly and hand-carry it to the next higher commander. Normally, the completed report, showing that all possible action has been completed at company and battalion level, should reach the supporting technical service within two workdays. There it can be processed and action taken to remove every possible item from deadline and the following day presented to the commander for his information. Thus, equipped with facts, he can apply pressure where it is needed.

My third point—Don't allow specialists and technicians to become whipping boys for commanders delinquent in maintenance. I cannot stress this too strongly. It is closely related to my earlier remarks about the chain of command. Squad, platoon and company commanders are the foundation of maintenance. Their attitude and actions can result in success or failure. It is the job of senior commanders to develop the proper

attitude within their commands by pinning down maintenance responsibility to commanders—not technicians. A squad leader is fully responsible for the condition of his vehicles, weapons and radios. This responsibility cannot be cast off on Armorers, Motor or Communication Sergeants.

You will hear of subordinates who attempt to dodge this responsibility with the plea that the maintenance of equipment is beyond their technical knowledge. Squash that bunk when you hear it: Organizational maintenance manuals clearly describe the work to be done. Commanders must be taught that they, and they alone, must insure that lubricants are applied properly and tires correctly inflated. It is not essential that they be able to pump tires or use a grease gun. But it is essential that they know that their subordinates have performed their tasks properly.

My fourth point—PM is military training and goes hand-in-hand with other military training. The goal of all training is success in battle, so demand that they go hand-in-hand. In every phase of a training program that requires the use of equipment, insist that maintenance of that equipment—and sufficient time to do it—are *musts*.

Far too frequently many of us think of maintenance as being concerned primarily with major items of ordnance equipment. This is only natural as a large percentage of our defense dollars are invested in such equipment. However, we should all

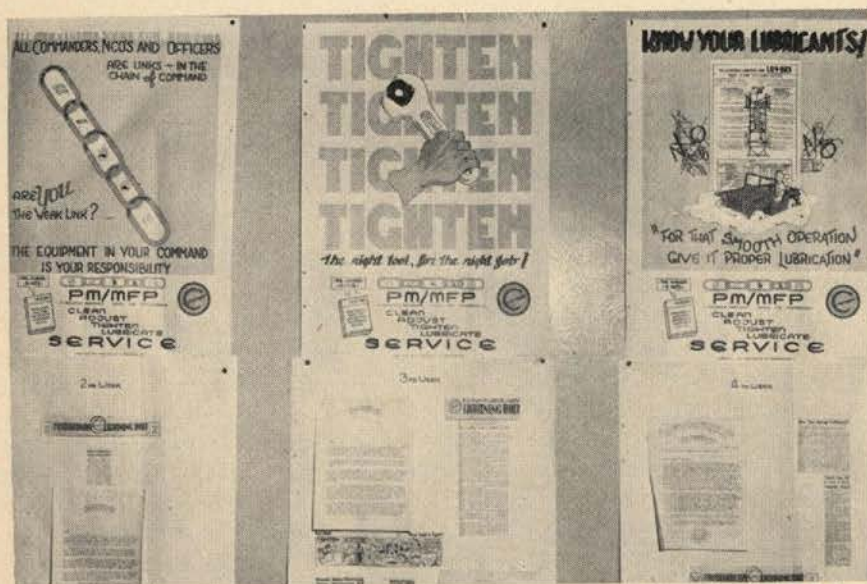
emphasize that the principles of maintenance apply with equal force to all types of military supplies and equipment, and, I might add, that PM must apply to items obtained from every source and entrusted to the care of a command.

For instance, in an administrative activity or training program, where only individual items of clothing are used, it is the duty of squad and platoon leaders to see that such items are properly cared for. Shoes must be cleaned and polished, wool clothing air dried and brushed, cotton and webbing washed and dried. Perhaps you are thinking, "Doesn't he know that soldiers buy and pay for such items with their monetary clothing allowance? Why should we concern ourselves with PM on such items of insignificant values?"

My answer is—regardless of who owns them—all are products of our nation's resources and her industrial economy. We, as a nation, cannot afford to again waste such critical resources or the industrial capacity needed to produce them. It is no secret that the raw materials for these three cited examples: leather, wool and cotton, have been on the list of critical items required in the event of mobilization. Finally, they are not of insignificant value. Only one pair of wasted shoes per soldier in an Army of a million and a half, equals \$10,800,000 at \$7.20 per pair. Even insignificant web belts at 45¢ each amount to \$675,000, if every man allows one to rot from sweat and dampness. These amazing sums loom large when considered in the light of your withholding tax and mine.

Preventive maintenance training in the care of all Government equipment is the first step in real supply economy. All training programs must include PM. Training of specialists and technicians in maintenance must convey the idea of getting the most from the least by repair and reclamation.

My fifth point—encourage your subordinates to *sell* PM at the squad and platoon level and try to instill the spirit of pride in equipment, once so prevalent in our Army. One effective means employed by the Third Armored Division at the Armored Center is the sponsorship of inter-unit competition, wherein the tank crews demonstrating the least demand



Displays serve to emphasize basic points in a command wide training program.

for higher echelon repairs and parts are recognized by the award of a distinctive pennant to be flown from the antenna mast. Real leadership can again develop the old competitive spirit of *bucking for orderly*.

Perhaps the very best way to develop initiative and enthusiasm for PM is for the commander to set the example. His evident personal interest soon becomes contagious. I would like to give you an example of this point from my own experience. I cited this same example last year. I had the good fortune to command a tank battalion and later a tank regiment in the Second Armored Division when General Willis D. Crittenger was in command. He understood this principle and made full use of it. The division had published very adequate directives to implement a sound PM program, but it was evident that the units were not attaining the prescribed standards. There was a lot of the other type of PM going on. I refer to *pencil maintenance*. His solution was to schedule frequent personal visits to the motor parks during the PM periods. Gentlemen, I commanded a tank battalion when these visits started and I can assure you that my interest in the PM program increased enormously and quickly. Not surprisingly, my company commanders also became very much interested quickly. The chain of command started to function. To me, this was the example *par excellence* of *putting on the heat*. Life may not have been very pleasant in the motor pool during his visits, but it certainly was not dull.

It might be well at this time to digress and consider some factors of good fortune in the care of our great quantities of mechanized equipment. That is, comparative good fortune. If you've got troubles, think of the other fellow. For instance, uncle Joe's boys aren't having the easiest sailing in maintenance these days. In a recent edition, *Time* magazine quotes a satellite premier as blaming a production shortage on an "anti-machine attitude" on the part of the workers. *Radio Sofia* concluded that "a barbaric attitude towards machines was too prevalent." An Iron Curtain Communist journal reports that the maintenance of machinery was so poor that pieces of farm equipment



Essential teamwork is shown by crew as they perform PM during a lull in Korea. U.S. Army

were found "left in such condition that wheat began to grow in them."

Ponder these consoling thoughts the next time you note the ex-ribbon clerk struggling with the intricacies of a wrench or grease gun. All American soldiers are most certainly not born mechanics, but our people have a native knowledge far above that of any other people in the world. Thank God for it, and, by ingenuity and leadership, develop it.

My sixth point—The instructor-inspector service concept should not be confined to technical service personnel. All command and staff visits and inspections should have as their goal the training of personnel in *what* standards are desired and *how* they can be attained. Most Americans are anxious, yes, even eager, to do what is required, if they only know and understand what is expected. Insure that they do. There are ways to handle the occasional Bolshevik who bows his neck.

My seventh point—If your job, now or later, is that of a commander or on the staff of a commander, always remember that PM is a command responsibility. We all realize the need for capable specialists. Yet qualified Armorers, Supply and Motor Sergeants, Mechanics and other essential technicians are not always to be found in every unit. They must be trained within the unit. Here, the technical services can give you much help when you are stuck. I have found that requests for such assistance are freely granted wher-

ever and whenever possible.

When maintenance problems arise that require outside assistance, ask for it. If technical channel requests fail to bear fruit promptly, go through command channels. Your commander expects to be kept informed and wants to give help when it is needed.

On those unpleasant occasions when subordinate commanders fail to appreciate and fully exercise their responsibility for PM, do the unpleasant things necessary. You will be surprised at the far reaching salutary effect attained by the condemnation or relief of an incompetent commander. Such actions are taken in confidence, but the news seems to spread where it is needed.

Contrariwise, see that praiseworthy accomplishment is noted—and be as public as you want with well deserved commendations.

As we consider these seven points, let us ask—Why preventive maintenance? Wars are fought with men—mobility—firepower. To win, all three must be in prime fighting shape. Our training is devoted to that end. Preventive maintenance puts more mobility and firepower on the fighting line where it is needed, instead of on the deadline. Preventive maintenance is applied supply economy and practical cost consciousness in these days when every pound of metal in our resources and the output of every industrial facility must be made truly effective. Preventive maintenance is a command responsibility. It is *your* responsibility.

Reiteration

With the change in editorship, it is only proper that a statement of policy be reaffirmed regarding The United States Armor Association. This policy, in general is a reiteration of those policies as laid down by this Association, the oldest of the Ground Arms Associations, during its colorful sixty-eight years of existence. However, one must remember the old Army maxim that repetition serves to emphasize and drive home those points considered to be of the greatest importance.

In consonance with these thoughts, let us restate the objective as set forth in the constitution and by-laws of the United States Armor Association:

The aims and purposes of this Association are to disseminate knowledge of the military art and sciences, with special attention to mobility in ground warfare; to promote the professional improvement of its members; and to preserve and foster the spirit, the traditions and the solidarity of Armor in the Army of the United States.

There shall be no capital stock, and no distribution of profits to any officer, member or other person, but the entire income of the Association from all sources shall be applied and used in the conduct of its activities and in furtherance of its object as set forth above.

This Association has perennially advocated cooperation and teamwork, and has contributed substantially to the Army team.

As industry made this great country of ours more machine-minded, Armor went through the transitional stages concurrently, from animal to machine, from horse to horsepower. Armor thus evolved as an integrated arm and, as such, appropriately represents mobility and mobile warfare.

Mobile warfare and its concepts are American in character. America leads the field in technological processes. To capitalize on these characteristics may spell the difference between defeat and success. To scorn them is sheer folly.

New Book Savings

Effective when this is read is a new Book Department discount schedule which means increased savings to users of our book service. The scale on all standard discount publisher items ordered through the Association will be as follows: 5% on orders from \$1.00 to \$5.00. 10% on orders from \$5.01 to \$10.00. 15% on orders from \$10.01 up.

To determine the amount to be paid when ordering books, you should take the total prices of the books as advertised and then subtract the allowed discount.

In company with this, will be a continuation of the prepaid postage provision on shipment of books when payment accompanies your order.

The feature of special house ads which bring you the widest intelligence of worthwhile books in the service journal field will continue.

This new program is inspired by several rea-

sons. First of all, there is the increased volume of Book Department business. This allows greater publisher orders at higher discount. Secondly, a substantial and sustained increase in Association membership and magazine subscription has made possible a limited stocking of worthwhile books, which means larger publisher orders and, once again, greater discounts. And thirdly, this is in line with the function of the Book Department—a subsidiary activity of the Association which is designed as a service to you rather than as a profit medium solely.

In connection with the above, once again it is emphasized that, although only professional material is treated through the pages of ARMOR, the Book Department can supply you with any book in the English language that is in print and available. Use of the Book Department works both ways. You help yourself and the Association when you order.

Disseminating military knowledge of all arms to our professional soldiers is our aim. To emphasize mobility in ground warfare is our purpose. In so doing we promote the professional improvement in our members. For example, from typical pages within this issue, one may note among others, articles of historical significance; an article on self-propelled antiaircraft artillery; an article on discipline and morale; an article on preventive maintenance; and a feature book review of an appropriate book by a well known book reviewer. Within these pages, when recommendations for changes are made they are offered constructively for the good of our Country, our Army, our Branch.

This Association is a non-profit making organization, and all monies received are invested within the covers of each issue of the magazine. Thus, any monetary profit is shared with the reader. One need only review the magazine over the past several years to note its growth in quality and quantity. In view of the fact that all material is submitted voluntarily, and published on a gratis basis,

this further enhances the prestige of the magazine and is a tribute to those who willingly give their time in the furtherance of the military art and science of war.

In promoting professional interest in our branch and in mobile warfare, we maintain that *only* the branch Association can accomplish this. Branch Associations, dating back to the conception of The U. S. Cavalry Association in 1885, have served as a repository for all ranks to present their views and share their findings.

However, an Army-wide military organization to operate in the general area above existing organizations with membership open to all military personnel, irrespective of branch, rank, or existing organization, is advocated by this Association. This type organization would serve to *supplement* existing organizations in a further contribution to inner unification of the Army and as a medium for transmitting the Army view to the sister services working for the defense of our great nation.

To the Great Beyond

When the last issue of ARMOR was put to sleep—in printing jargon this denotes when the editor turns his final proofs over to the printer—we were not aware of the passing away of one of our former editors. Lieutenant Colonel Matthew Forney Steele died at his home in Fargo, South Dakota on 25 February 1953 at the age of nearly 92.

Colonel Steele graduated from the United States Military Academy in 1883. His first service was in the Dakota Territory where as a junior officer at Fort Lincoln and Fort Reno he engaged in numerous skirmishes with the Indians. Following this service, he participated in the battle of San Juan Hill during the Spanish-American War, for which action he was awarded the Silver Star. Colonel Steele served as editor of ARMOR, at that time under the name of *The Cavalry Journal*, during 1904-1905. He served an extended tour of duty as instructor of tactics at the Command and Gen-

eral Staff School, Fort Leavenworth, Kansas.

Later, his Leavenworth lectures were compiled into a two-volume classic entitled "American Campaigns." These volumes have been used as textbooks at many military institutions the world over, and are still a best seller here at ARMOR. It is rare to find a professional military library that does not contain a set of Steele's "American Campaigns."

His last tour of duty was as Military Attaché at Moscow. Retiring in 1912, he was recalled to active duty during World War I to serve as Professor of Military Science and Tactics at North Dakota State College.

After his retirement, Colonel Steele was a prominent citizen in the civic affairs of Fargo and was held in great esteem by the townspeople.

Colonel Steele's contributions to the military art and sciences will never be forgotten.



Dust and rocks fly as the driver of an M4A3 negotiates a difficult curve.



A slight incline on foot becomes a major obstacle for the new tank driver.



Sinking in to its fenders, the tank engines prove ability to push forward.



With radio the instructor corrects errors at once.



Steeper hills are attempted as the driver improves.

Photos U.S. Army

TANK DRIVING TRAINING

The 1st Armored Division at Fort Hood is training tankers for duty in all parts of the world, including Korea and Germany. Mobility, fire power and shock action—these are the basic principles of a tanker's training. To obtain maximum shock action, tankers are taught that their presence in the enemy's rear area creates havoc from which the enemy does not soon recover—his lines of communications disrupted, it is only a short time before his front line will crumple.

However, student tankers at Hood learn that the obstacles are many before the tanks are in a position to speed across the countryside. An obstacle course prepares tankers for most of the many obstacles they will face in the performance of their duties—water, hills, mud, bad roads, no roads and road blocks.

There are three phases of tank driving. The first phase consists of straight, flat lanes, approximately 100 yards long, to familiarize the driver with normal tank driving and the various operations controls. The second phase is a one-mile tank trail which, in addition to straight-away driving, teaches the tanker how to negotiate hills and curves. It is easy enough to "cowboy" a 48-ton tank around a curve, kicking up clouds of dust. It is equally easy to throw a track in the process. As with everything, there is a right way and a wrong way. Tankers are taught to gauge curves and to take them in a manner which will not disable their tank.

Divided into four sections, the third phase of the course is the tanker's baptism of bouncing. It consists of a barrel obstacle, backing stalls, an uneven log obstacle and log piles.

The backing stalls, dug out of dirt mounds, afford practice in moving a tank quickly into position with as little jockeying around as possible. Reverse movement drill of this sort is of great tactical value when a tank has to either scoot rapidly for camouflage or avoid enemy fire. The uneven log obstacle is designed to test the tanker's ability to guide his tank over bumps and ditches. Logs, scattered unevenly at distances of 10 feet, cause the tank to rock and lurch. The last pile of logs comprises the fourth section of the obstacle course where the driver learns how to get his tank over high barriers.

Directing all classes from an elevated platform overlooking the course, the instructor has a complete view of all tanks and is always in radio contact. An assistant instructor is assigned to each tank to lend aid and advice to the new drivers.



Teamwork is essential in parking as the commander gives instructions.



With inches to spare on either side, the commander communicates by radio.



Log obstacles teach the driver greater maneuverability over high barriers.

CARDED

Trials and Tribulations of the NCO's

by **MASTER SERGEANT JAMES D. MERRILL**

SINCE I was a green recruit some ten years ago, I have heard enlisted men talk of the *old army* and I have never quite understood what they meant when they used that term. To the retired sergeant who still enjoys joining a bull-session now and then, it may mean the Army of Occupation in China, 1910. To another it may mean the Army prior to the last war (Circa 1930) and to some it means the Army that invaded North Africa, Italy, and France. But to each it seems to recall the time when a non-commissioned officer considered himself an *Officer* in every sense of the word and the implication is that NCO's today are not as good as they once were. This, I will not believe.

Most of the arguments boil down to the fact that a sergeant had some *authority* in those days. I don't claim that many noncoms in the Army today exercise the power or exert the influence they could, but I have found that a good soldier is usually given as much responsibility as he will take. And here is my main point: you can't separate authority, power, and prestige from responsibility and dependability. Let's face it; many of those who are the most concerned about their lack of authority are the very ones who shirk responsibility and run to find an officer whenever a decision has to be made. If we want our authority and prestige restored, we will have to be ready, willing, and able to accept responsibility and to get the job done.

Back in the days when the sergeants ran the army, any noncom-

missioned officer could have done a pretty fair job of running his platoon. Every NCO knew the basic individual weapons of his branch of the service. He knew his men, too, and he led them because he was a better soldier. Sure the Army was simpler then and there was less for a man to learn and remember. But the fact remains that the Army has grown and become more complex while the NCO has stood still. We have to be smarter, know more, work harder and carry more responsibility now, in order to be as good as the old Sarge was and unless we do expand to fit this bigger job, some officer will have to step in and do our work for us. We are flunkies only because we are willing to be flunkies, or unwilling to put out the effort to become qualified in our jobs. We have let officers take over jobs we should handle because we couldn't or wouldn't take them on ourselves. Most of us fail because we are afraid to try! We have stopped taking *home-work* to the barracks and burning the midnight oil. We no longer have the same professional pride in our ability to do a soldier's job—to live a soldier's life, to be a soldier. Until we develop it again we are not going to regain our former respected place in our profession. Gripping won't help a bit. Instead of trying to help ourselves we still blame the Army, the system or the officers.

With all due respect, the officers are partially to blame for the situation. Instead of encouraging a man who uses his initiative they sometimes ignore him, or worse, suppress him. Another charge that can be made is that the officers have put up with mediocrity so long we have all begun to lower our standards. And too often, as soon as a man begins to

show a little interest and enthusiasm he packs his duffle bag for OCS. But after all the talking is done and the buck has been passed as far up the line as possible, we still have to admit that nobody can make a leader of us without a little help on our own part. In the long run, only we, the NCO's of the Army, can rebuild the noncommissioned officers corps and make it a professional corps capable and worthy of the name.

Let's take an honest look at ourselves. If we can diagnose the disease, we'll be able to find a cure.

One type of NCO who takes all and gives nothing is quite familiar to us. The *homesteader* of the Army is not only useless to himself but he is mainly responsible for spreading the attitude that the Army is just a job like any other. A man who feels like that may make a good clerk but he is no soldier. Not until he decides and realizes that the Army is a way of life, his way of life, is he of much real use to the Army. I like the story about the General who was inspecting an outfit and stopped to chew one of the soldiers about the condition of his men and equipment. "Sir," replied the old soldier, "I have been through eight campaigns and fought in twenty battles!" The General nodded. He pointed to one of the pack-mules and remarked, "yes, but so has that animal and you see he is still an ass." Not everyone who has a serial number is a soldier.

Another familiar type is the NCO who has come up too fast. Of course, no one can blame a guy for taking his promotions as they come along, but what happens when the man gets more stripes than he can handle is certainly not good for the man or the Army. If there were some provisions for temporary promotions so

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that a man would carry the stripes only as long as he carried the job, it would help. As it is, the man who is promoted too fast can do one of two things. He can buckle down, study on his own and make up for the knowledge he should have picked up in each intermediate grade or he can glide along, apologizing for the rest of his time for the information he just never bothered to dig up.

In almost every discussion of this sort the Doolittle Board and its democratic approach is brought up and kicked around as if the Democratic Army the board endorsed was a new idea. It is not. It has been tried before in the US Army and it didn't work then, either. Both sides had elections of officers during the Civil War and both sides found out that popularity wasn't enough to qualify a man for military leadership. Even the Russians have given up the idea because it was unworkable. It is fast dying out and so, probably, the less said about it the better. However, the idea has contributed to the attitude that a man has more rights than duties.

Well, those are the symptoms. Now for the cure.

In comparing our present setup with the *old army* we ought to recognize, in the beginning, that the quality of our enlisted men has improved. I don't mean that our men are any braver than Sergeant York, but the younger generation—the current crop of recruits—is man for man a better educated, more intelligent man than in the past. He may be a little less rugged, not quite as rough and ready but he has a brain and he thinks. The old sergeant would find that he couldn't lead the soldier of today by blasting him with a stream of abusive vulgarity. Today's soldier doesn't cower and he can't be bluffed or bullied. The old sergeant's solution for a reluctant soldier was to invite him out behind the latrine. All you'd prove by that today is that you can lick him. Your right to lead him rests on other things.

Mainly, it depends on knowing more about the job at hand than he does; to be able to detail strip the basic weapons; to know where a tank will go and, more important, how to get it there; to know how and when to adjust a track; and to be capable of more than first echelon

maintenance of the engine and the gun. These things are elementary, daily duties. To really know his job, an NCO must go way beyond all this. Of course, he should be able to drive better and shoot better, but he must do more. He ought to be able to adjust artillery fire and to know what he can reasonably expect of a doughboy. He ought to know where to expect mines and have some idea what to do about them, including disarmament, if necessary. He should understand how a company really functions; what he can count on in the way of help from the communications sergeant, the company maintenance section, the supply sergeant. He should know the jobs of all these others well enough to understand their problems and not expect things that they can't deliver. Sure it's a large order. An NCO has a large responsibility. And where he fails, his platoon leader usually steps in to *take over*. When that happens a few times, the NCO loses the respect of his men and confidence in himself; thus discipline deteriorates.

Real discipline is just the result of good leadership. We NCO's have all the laws, regulations, and customs of the service behind us, so we can force the soldier to obey even if we can't make him like it. The regulations really operate to protect the weak leader and only the weakest leader will rely on them alone, to get the job done. In the first place, no set of regulations will ever be made that will fit every situation. That is why we cannot have pat solutions and ready answers for every little problem. Men follow out of respect and confidence in the ability of the leader. It's necessary for the NCO to have the authority to force obedience but a good one will seldom have to use it. His men will want to follow him because he is right and because they believe in his honesty and because his approval, or his scorn, really matters to them. They know, instinctively, that he is all these things that others pretend to be and they try to emulate him. When you find your men copying little things you do, mannerisms, expressions, and the like, they are paying the finest compliment to your leadership which is possible. They are following.

You can learn a lot more about a man by watching him work when things are not going very well than in a situation where everything is clicking perfectly. If he complains about the officers or the system; if he blames his men, equipment, or lack of authority; if he gets mad and adds to the confusion; don't trust him. The whole Army is set up to help an NCO do his job. Behind every regulation, every rule, and every order there is a common sense reason. By the time a man has spent some time in the service, he should have confidence enough in the system to believe that this is so, and loyalty to the Army at large should keep him from uselessly criticizing it or allowing his men to do so out of ignorance. "Any fool can criticize—most fools do." There are many glaring errors. After all, the Army is just a very large group of average human beings any one of whom can and does make mistakes. It's easy to make fun of what we don't understand but we should all realize that respect for the Army and pride in soldiering can be destroyed by blaming everything that goes wrong on "the Army."

"But what can I do?" you ask. You can improve yourself until you're competent, efficient, and professional in your present assignment. The effect will be to improve your unit because competition will see to it that others match your ability. Throw a marble in a pond and watch the ripples. The marble is nothing, in itself, but it sure stirs up the stagnant waters.

Maybe I don't measure up to all I've said here. But these are the grounds on which I must be prepared to meet my men. These are the things on which I'm willing to be judged by my superiors. These are my obligations to the nation and to the Army. I'm not trying to unionize the NCO's but until we all begin to see that we do have responsibilities—until we start to live up to the traditionally high standards in our profession—until we start policing ourselves—we have no right to gripe because they don't give us more authority. The energy has to come from the bottom up. Coffee doesn't perk until you light the flame. It's high time we strike the match. Only we, the NCO's can do it.

How Red Arms Stack Up*

DON'T get the idea that they are a bunch of peasants. They may turn out junk by our standards, but it's effective junk."

That's the way one officer of the Ordnance Corps' industrial intelligence branch last week described the Soviet workers who are turning out Russia's military equipment. His remark was based on studies of armament that has been captured in Korea and returned to the U. S.

The military's attempts to snag Russia's gear have been catch-as-catch-can. The stuff is not easy to get. So far, the Army has fared best, having captured an assortment of small arms, artillery and tanks. Coming in second best, the Air Force has copped at least 2 MIG-15s, the jet fighters that are said in some respects to have topped our own over Korea.

Basic Principles

The gist of the studies is that Russian production is efficient, if not fancy. You must first understand two obvious, simple principles that underlie the design of Russian equipment,

*Reprinted with special permission from *Business Week*. Photos by H. C. Phelps, Eastern Editor of *Welding Engineer*.

before its production methods make any sense: (1) Most of Russia's gear is designed and engineered for a short service life in combat; and (2) the Soviets leave out components that give safety and comfort to the men who operate the equipment.

To an American this sounds ruthless and shortsighted. But to a Russian it's just plain realistic thinking. The Russians figure that the life expectancy of battle equipment is short, at best. So they turn out a lot of fairly durable equipment rather than concentrating their efforts in making a few models that are technically perfect.

The Russians, for example, figure that a tank gun has a short service life in combat. So the gun barrel of a Russian tank is rated for only about 20 rounds of ammunition. The gun may be used more than that, but it will lose accuracy. The Russian designer, however, is happy. He's saved high-grade steel for more critical uses.

In Mufti

Another example is Russia's T-34 tank, a model of Soviet engineering. It's a flop. But on the battlefield, it's something to be reckoned with. In

World War II, the Germans who fought against it gave it a top rating; and in the early days of Korea it took the offensive—for a short time.

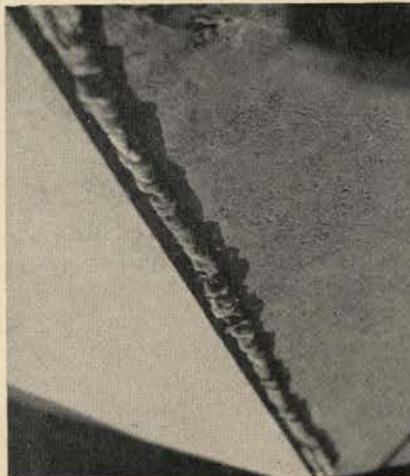
It's a mistake to brush off Russian equipment just because it is inferior by U. S. standards. While the Soviets skimp on safety trappings and other refinements, they put fine work and materials into the places where it counts—and where it shows up in the performance of the equipment.

Slapdash Assembly

This apparent lack of consistency in quality and standardization shows up in the study of one T-34, now a museum piece at the Aberdeen Proving Grounds of the Ordnance Corps. U. S. experts saw it as evidence of Russia's dispersed, varied industry: One plant produces machine-made parts, another makes them by hand. Many subassemblies of the tank would be rejected before they reached a U. S. assembly line. The Russians put them together, anyway, usually with slapdash workmanship. But vitally important parts—say the ones for aiming the cannon—are handled with tender, loving care.

Specifically, the welding jobs on

The first four photos show crude welding without proper treatment. Hinges are welded in a slapdash manner. The weldment in the second view results from high silicon content, as is crack in bell housing in photo 3. Seams are some-



the T-34 typify Russian quality control (if it has such a system). All the armor plate is welded by hand. The joints of a weldment frequently are poorly fitted. Secondary fittings—brackets and supports—are quite haphazardly welded. Cracks in the armor plate—the results of poor steel-making or foundry methods—are patched up afterwards. But gears that raise and lower the gun have welding matching the best in U. S. plants.

One reason for the poor quality of Russia's welding is the steel used. The armor plate and turret castings of the T-34 have a high content of silicon, an element used in alloying steel. In the U. S., welding engineers hold their silicon content to about 1% to get good weldments. Russia's steel goes as high as 2%, and often results in internal stresses and cracks after the welding operation.

\$64 Question

Actually, the metallurgical methods of the Russians keep U. S. experts guessing. The Soviets, apparently, haven't a well regulated system for adapting metals to production. Or, more likely, fabricators use what steel they have on hand, tapping a supply that varies in quantity and selection. They use brass in some products where brass really isn't necessary. The shaped-charges of their armor-piercing bazookas, by contrast, use ordinary iron instead of copper, which the U. S. believes is a must for this kind of projectile.

In the main, though, the Soviet metallurgists rarely go wrong with the material that counts. They use titanium, a relatively new metal, as a

stabilizer in the stainless steels that go into their jet turbine engines for fighters. Their armor plate for tanks, for the most part, matches U. S. requirements. Steelmakers don't skimp on the hard-to-get alloys such as manganese, molybdenum, and chromium, if that would mean sacrificing the hardness of the armor plate.

Cause and Effect

It's obvious that the poor equipment coming off the production line isn't due to lack of know-how. Back of the inconsistencies in its quality and design is the fact that Russia's supply of skilled workers is spread pretty thin. The sudden and tremendous buildup of Russia's economy has not allowed the Soviets enough time for turning peasants into topnotch craftsmen and workers. Russia's capacity since 1941 has increased faster than its program for training production men.

To offset this problem, Russia has made good use of its engineering personnel. Soviet engineers have learned to supplement skilled craftsmen with unskilled labor in producing weapons. So a tank comes off a Russian production line looking like a hybrid of a limousine and a jalopy.

No "Firsts"

If the Russians have developed any radically new production methods, they haven't yet showed up in captured equipment. One of the first to appear would certainly be press forgings in airplanes. After World War II, the Russians hauled off a lion's share of big German presses: four forging presses, two extrusion presses,

and the designs and some parts for one giant forging press. Since then, Russia has probably developed and expanded a press program similar to that of the U. S.

But no forgings have been found in the planes captured in Korea. In fact, the MIG-15 uses a high number of stamped parts, many more than the U. S. uses for a similar kind of plane. So you can make two guesses about Russia's press program: It is still bogged down in the development stage, or the output is going into bigger planes such as bombers, which haven't been used in Korea.

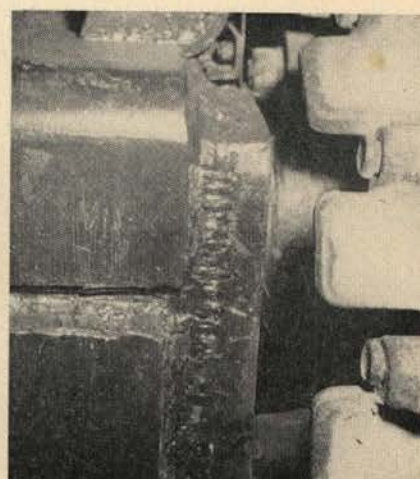
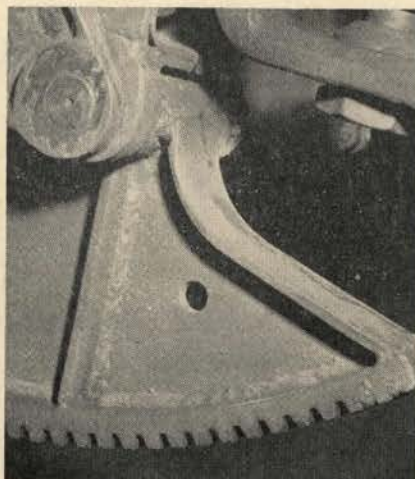
The makeup of the captured planes throws light on another angle of Soviet planning. By using more small parts in a plane than we would, the Russians can farm work out to small plants and to job shops where they can be either hand- or machine-made. That eliminates the need for making most parts in large aircraft factories.

Double Standard?

The baling-wire methods of the Russians have the experts stumped in still another way. There's a big question as to whether Russia is using a double standard in its production of war goods. It might be making the "junk" for export to the satellite countries and putting a Cadillac finish to equipment slated for its own consumption and stockpile.

Most industry people who are familiar with Soviet methods reject the idea of a double standard. They think that Russia is involved in manpower and supply problems, which would complicate its planning with two different grades in quality.

times welded over and over again, as in photo 4. Topnotch welding is used in critical places, as for example the gear for a gun aimer shown in photo 5 and the exposed joint of armor shown in photo 6. Results—greater Red plant productivity.





THE T74 RECOVERY VEHICLE

WHERE a medium tank's price tag ten years ago was about \$50,000, today's Patton 48, the 50-ton medium tank, costs American taxpayers about \$200,000 each. Four times more expensive today, but many times more lethal on the field of battle, nevertheless these vehicles can and do become battle casualties under certain conditions—and nearly a quarter of a million dollars is at the mercy of the enemy.

Ever since the Army first made tanks, Army Ordnance Field Service personnel reasoned that if a tank was designed to destroy a tank, then a tank-like wrecker could be designed to rescue a damaged tank and prevent capture or destruction by the enemy.

As a result of an idea by Mr. E. W. Holt, Senior Tank Automotive Engineer of the Army Ordnance Field Service, outmoded World War II tanks, instead of being relegated to the scrap pile, are now being put to work as recovery vehicles by means of a relatively inexpensive redesign program.

Less than a year ago, the Office, Chief of Ordnance requested the Philadelphia Ordnance District to

explore the possibility of engineering this dream into a practical reality. The York Regional Office asked Bowen-McLaughlin-York, Inc., a York, Pa. firm specializing in rebuild of Ordnance combat vehicles, to undertake this work. This was a tough order, since it meant converting the battle weary World War II M4A3 Sherman medium tank into a modernized super-efficient *work-horse*, that could rescue our newer and larger tanks under combat conditions.

The York firm investigated all types of commercial units in existence in the heavy construction field, the B-M-Y engineers sharpened their pencils and came up with the answer that the job could be done, and at a very moderate cost. In May 1952, the first pilot model, designated as the T74 Recovery Vehicle, was placed on order with Bowen-McLaughlin-York, Inc., and delivery made to Army Field Forces in July 1952. Based upon the results of rigorous tests by the Army at Ft. Knox, Ky. a second pilot, incorporating all changes desired by armor personnel, was built and shipped to Aberdeen Proving Ground for further shake-down tests, in December, 1952.

The prime contract for quantity production of the new T74 Recovery Vehicles was awarded to the Bowen-McLaughlin-York Company. The firm immediately placed sub-contracts with over 300 suppliers.

The new *tank-wrecker* is a streamlined giant weighing nearly 50 tons, specifically engineered to support the newest and latest model medium tanks currently being produced for the Army. It costs nearly \$200,000 to build each of these new fighting tanks, whereas the T74, salvaged from the scrap pile, costs less than one third of that amount to produce.

When combat tanks are severely damaged by enemy land mines or shell fire, or become hopelessly mired down in torn-up battlefields, the call for the recovery vehicle is immediate and urgent. The T74 is capable of towing damaged tanks cross country as well as hoisting and winching a tank out of mud and deep ditches, or flipping upright an overturned tank.

Huge winches, hydraulically operated, provide hoisting capacity sufficient to pick up all but the heaviest of the new tanks. A wholly new conception of transmitting power to



these winches has been incorporated. Precision controls and high safety factors have been engineered into the T74. The hydraulic system is the charged, pressurized type operated by pilot control valves, transmitting full torque at infinitely variable speeds. For example, less than one pound effort by the operator applied to the control valve lever, will control a line pull of 85,000 pounds, whether the line travels 6 inches per minute or 50 feet per minute.

The T74 is equipped with a front spade so designed as to stabilize the vehicle for extremely heavy lifting

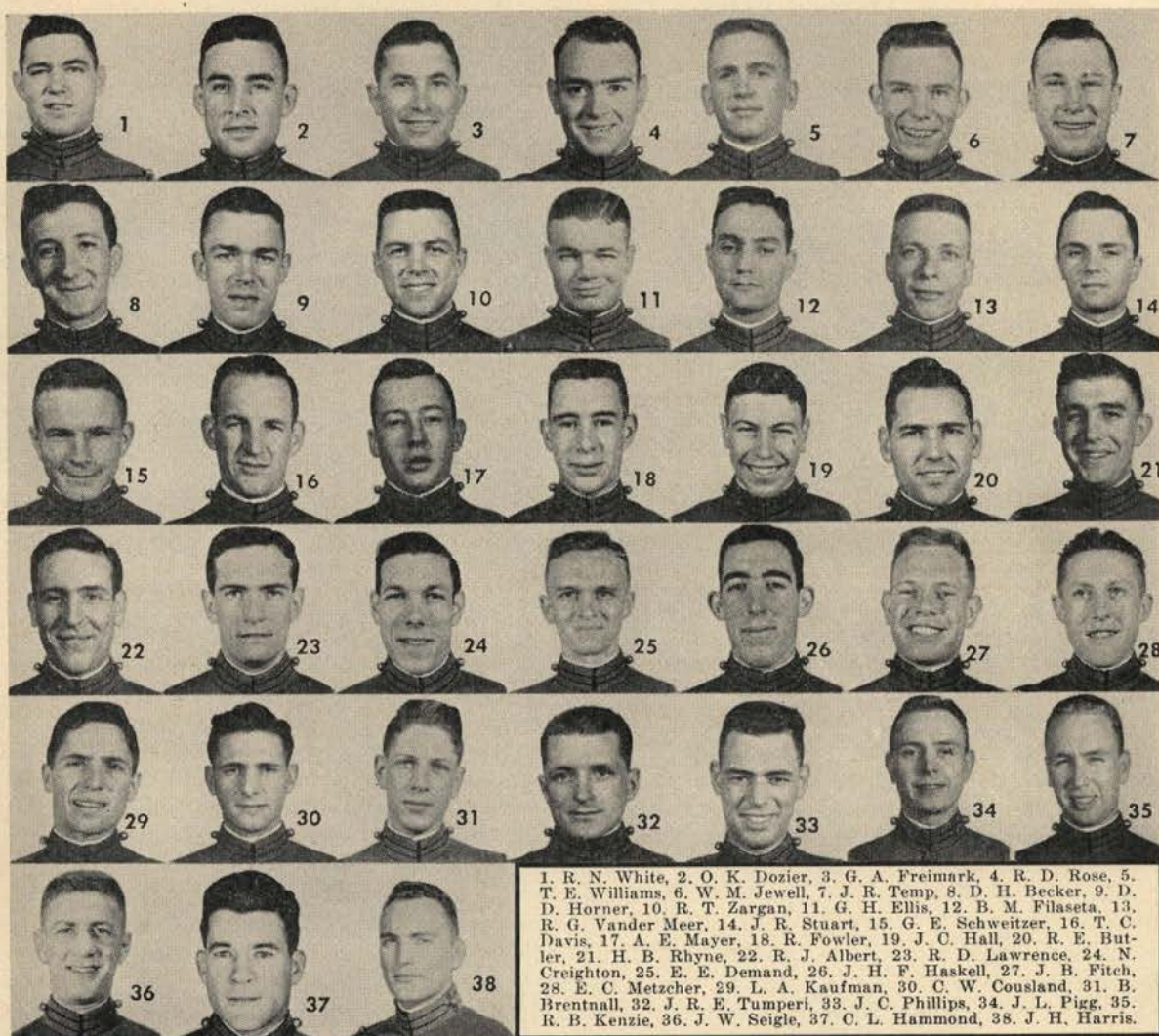
and/or towing. The design of the spade also permits its use as a bulldozer. This feature permits the improvement of terrain when adverse conditions prevail at the site of recovery operation. The spade may be stowed, released and adjusted to desired height for all operations from within the vehicle, without the exposure of the crew to hostile fire.

The boom is raised into operating position by hydraulic cylinders, which may be used to provide a *live* boom, allowing the spotting of heavy loads fore and aft with precision control, when actual movement of the ve-

hicle is not actually desirable.

In 1951 and 1952, Bowen-McLaughlin-York, Inc., made a cash refund to the Government of \$1,400,000, saved in rebuilding the first increment of 1300 World War II Tanks. Tanks, rebuilt on this order, were used in the initial campaign in Korea, and are still shooting there today. Over 5000 World War II tanks have been rebuilt and modified by this firm in the last four years. This concern is also engaged in producing the monogyro-stabilizer for tank guns, as well as other engineering projects for the Army.





UNITED STATES MILITARY ACADEMY: CLASS OF 1953 ARMOR GRADUATES

The 1953 graduating class from the United States Military Academy contains 513 cadets. Of these graduating cadets, 38 have chosen Armor as their branch. This is the maximum quota allotted to Armor, based proportionately, for the graduating class at the Military Academy. First classmen make their choices on the basis of class standing, so far as the respective openings go.

The 38 allotted spaces for Armor—the arm of decision—were snapped up by the cadets ranking above 227 within their class. Never before in the history of the Academy have the Armor openings been filled by cadets with as high an academic standing as the class of 1953.

Enthusiasm for Armor is at an all-time high among the cadets, and it is expected that the open-

ings in Armor will continue to go to the cadets ranking in the upper half of their class.

These mobile-minded cadets have been instilled in the spirit of the offensive, and all are looking forward to their branch school, where they will learn more about the branch that is decisive in battle.

Lt. Colonel James F. Hollingsworth is the Senior Armor Instructor and also Chief of Armor at the Military Academy. Captain Simon S. Marks is his assistant. These two officers present or direct all training given to the cadets in Armor.

Each of the Armor cadets received a personal letter of congratulations from Lt. General Willis D. Crittenger, President of the U. S. Armor Association, on behalf of the membership. Many have applied for full active membership in the Association upon graduation and being commissioned.

Hitler, Versailles and St. Germain

by DR. ROGER SHAW

ON November 13, 1918, the Hapsburgs abdicated the Austrian throne at Vienna—to which they had come in 1278, under Rudolph I. At that time Rudolph Hapsburg had worsted the Czechs, or Bohemians. Now, after well over six centuries, Karl Hapsburg—great-nephew of Franz Joseph—was through. He had died in exile at Madeira by 1922, though his Italianate Empress Zita, and his son Otto, were to carry on monarchist propaganda activities from Belgium. Meanwhile, the Czechs were once again on top, with ample Allied support obtained by their statesmen, Doctors Masaryk and Benes.

The Austrian House of Representatives, or rather its German-speaking members, took over things in the general revolutionary confusion, and declared for a Republic. Won over by Woodrow Wilson's maxim of racial self-determination, they named their country "Germanaustria," and added that "Germanaustria is a component part of the German Republic." Austrian delegates went to Germany, and were welcomed there as brothers come home. The Austrian provincial diets republicanized themselves simultaneously; and from Vienna, in all directions, non-Germanic Austrians (ex-Austrians now) were packing their bags and going home.

At the end of the war there had been 2,300,000 Austro-Hungarian troops at the various fronts in Italy, Russia, France, the Balkans, Asia Minor. Including the "youngster" class of 1920, there were half a million indifferent reserves. Roughly 1,300,000 men were on the Italian front, which was more popular than the others because Italians were

"easier," and also because they were generally disliked by all the varied Hapsburg races. Perhaps 400,000 men were in Russia. The Austrian army still possessed nearly 6,000 guns, and enough horses for 4,000 cavalry at least. The tired polyglot fieldgrays streamed off homeward in a dozen directions, taking with them what wornout equipment they could. Their retreat was covered by the hero "Andreas Hofers" of the Hapsburg army: the formations of *Kaiserjaeger* and *Kaiserschuetzen*.

Austria was in a state of complete destitution by the close of Armageddon, and things tended to become worse in 1919 and 1920. Only the credits from a forgiving America (granted largely in kind) kept the starving Viennese alive, for the long drawn-out Allied war blockade had sapped the strength of the city populace, and reduced them to an almost incredible degradation. The Quakers and Herbert Hoover deserved the laurels, Hoover specializing on children, and the Society of Friends on the capital city in general. "Hapsburgs are turning into prostitutes, and prostitutes into Hapsburgs" was a jest of the day, and a grim one. Across the new boundary line in Czechoslovakia, old Germanic towns like Bruenn became Brno, and Karlsbad, Karlovy Vary! There were brand-new, independent regimes functioning at Laibach, Sarajevo, Trieste, Cracow, and Lemberg, as well as in Hungarian Budapest and Bohemian Prague.

On November 3, 1918, the Italians granted Austria an Armistice based on harsh military terms. But this was only the beginning of the days of reckoning for the "Austrian" World War. For the Allies, America honorably excepted, announced among themselves that Wilson's famous Fourteen Points did *not* apply

to defeated Austria. Even Wilson did not stick to his guns under Allied pressure, agreeing to give some Slovenes and 300,000 Germanic Tyrolese to Italy, and 3½ million other German Austrians to the Czechs. Austria was to receive only two-thirds of the Germanic population of the extinct Hapsburg Empire, for Italy must have the strategic Brenner Pass, and Czechoslovakia the Sudeten mountain frontier and the rich industrial districts. As to Union, in the Wilsonian manner, between Germany and Austria, it was forbidden.

In May, 1919, the Austrian peace delegation went to Paris, where the Germans were also about to hear their doom pronounced. The Austrians wrangled and protested on the very grounds supposedly sponsored by the Allies: self-determination and the Fourteen Points. They fought hard to save the Germans of Bohemia from the Czechs, but to no avail. Only Wilson would listen to them, and he was under the spell of the persuasive Czechoslovak Dr. Masaryk. (Shakespeare mentions a mythical seacoast for landlocked Bohemia, and if the Czechs could have found one on the map, *any* map, they would certainly have obtained it from the Allies.)

The Treaty between Austria and the Allies was signed, unwillingly, at St. Germain-en-Laye, a Paris suburb, on September 10, 1919. The following July it went into force, amid endless complications which were still being heard from, nearly twenty years later. The territorial boundaries were arranged: Bohemia and Moravia to the Czechs, Galicia to the Poles, Trieste and South Tyrol to Italy, Slovenes and Dalmatians to Yugoslavia, and other lesser losses. The Hungarians seceded, and they themselves lost territories to all those around them. The Hapsburgs had ruled over 260,000 square miles of Austria-

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Hungary, with 50 million people. The postwar Austrian republic contained 30,000 square miles, and 6 million inhabitants. Riches to rags.

In 1920 a popular referendum was held in the Klagenfurt basin region, between Austria and Jugoslavia, which voted in favor of Austria in due course. The Germanic province of Burgenland, with 300,000 people, the Allies transferred from Hungary to Austria as "compensation" for the German-speaking millions given to Czechoslovakia. The Hungarians objected violently, and here a minor war resulted.

The Austrian army was limited to 30,000 long-service professionals, "in" for at least twelve years, with twenty-year officers to lead them. The importation of arms and munitions was forbidden, as were gas, tanks, big guns, aircraft, and armored cars, or "any similar machines suitable for use in war." Flame-throwers were outlawed. There were to be only three field-pieces for every thousand men. Even the number of police was curtailed by the victorious Allies. Furthermore, penalties were provided "for the trial before Allied military tribunals of Austrian offenders against the laws and customs of war," but this was never enforced.

Austria lost its navy and entire commercial fleet, and was sentenced to pay war reparations to an indeterminate total. Although its people were very hungry, they were compelled to hand over a large part of their available livestock. The Treaty terms were so stringent, in fact, that by 1922 Austria placed its finances under control of the League of Nations, or in other words went into receivership. But most important of all, by Article 88 of St. Germain:

"The independence of Austria is inalienable otherwise than with the consent of the Council of the League of Nations. Consequently, Austria undertakes in the absence of the consent of the said Council to abstain from any act which might, directly or indirectly, or by any means whatever, compromise her independence, particularly, and until her admission to membership of the League of Nations, by participation in the affairs of another power." This little paragraph most effectively put an end to any idea of immediate Austro-German union.

By Article 80 of the Versailles Treaty, between Germany and the Allies, there was amplification of the Treaty of St. Germain:

"Germany acknowledges and will respect strictly the independence of Austria, within the frontiers which may be fixed in a treaty between that state and the principal Allied and Associated powers; she agrees that this independence shall be inalienable, except with the consent of the Council of the League of Nations." Just as little postwar Austria was a miniature Germany in every respect, so St. Germain was a miniature Versailles, except that Versailles cost Germany only 27,000 square miles and 7 million people. And although Germany was ten times as populous as Austria after Armageddon, the German army was limited to only about three times that of the Austrian: 100,000 men bound by similar organizational restrictions.

The one and only foreign war of the little Austrian republic of 1919 was with the aggressive postwar regency (or monarchy without a monarch) of Hungary, now reduced to a population of 9 million by the Treaty of Trianon. The Hungarians were bitterly opposed to ceding their Germanic Burgenland to Austria at the behest of the Allies, although it had originally been Austrian, and was mortgaged to Hungary in the Seventeenth Century. Its land was ninety per cent productive, and it had minerals to supplement its teeming agriculture.

St. Germain, this time a kindly saint, gave Burgenland (or "West Hungary," as some called it) to the Austrians, in toto. Budapest should have handed over the province to Vienna in August, 1921; but instead, the Hungarians organized a fierce nationalistic propaganda against the deal, and sent swarms of heavy-armed irregulars into the disputed border district, whose bucolic inhabitants gaped with sheer amazement. Austrian state-troopers rushed in to take possession of Burgenland, and a series of clashes and petty battles resulted all along the line.

The Allied mission in charge of the territorial transfer was completely bewildered, and appealed home to its respective governments while the Austrians and Hungarians skirmished

and bushwhacked. England was inclined to side with Vienna, while ever anti-Austrian Italy supported Budapest. Finally, Austria and Hungary signed a protocol at Venice, under Italian influence, which gave back Burgenland's capital, Oedenburg or Sopron, to Hungary after a referendum. Austria protested the vote as "terrorist," but the Allies accepted the manipulated verdict. So the Austrians annexed Burgenland minus Oedenburg, and made Eisenstadt (population, 5,000) capital of the province in its stead.

Meanwhile, the Prussian Monster had taken a loss. It was the first setback he had ever really suffered, save for six temporary years during the Napoleonic era. But this time he gave, and gave without stint. The French took back Germanic Alsace-Lorraine, with its iron mines and strategic points for driving westward. The Poles, now reunited, received Posen, West Prussia, Upper Silesia, and Danzig in all but name. Belgium got Eupen and Malmedy on the frontier; Denmark a zone of Schleswig-Holstein; Luxemburg left the German customs-union. To wild and woolly little Lithuania went Memel on the Baltic, and Czechoslovakia garnered a corner bit. The rich Saar coal-basin was placed under League of Nations tutelage.

The German colonies were divided among England, France, Japan, Belgium, and the British dominions, but not Italy, which screamed to the four winds that it had been cheated. The German navy and merchant-marine were confiscated; the left bank of the Rhine was occupied by Allied soldiers; the Prussian Monster was disarmed, and his disarmament was scrutinized by Allied agents. His war reparations were set at an "astronomical" figure never to be paid in full, and he was forced to acknowledge his "war-guilt," whatever it was. Like Dr. Frankenstein, in the legend, he was tired, and starved, and bled white by fighting and paying; but unlike old Dr. Frankenstein, the Prussian Monster had the will to survive and to stage a comeback. He had always had a peculiar faculty for absorption through the centuries: French Huguenots, Dutchmen, assorted Slavs and Wends, Balts, etc., etc. Now, he swallowed many thousands of East-Jews from Warsaw and

Bucharest, Prague and Lemberg, who flocked into Germany to speculate and barter sometimes and to wax rich, much to the anger of the traditionally respected and "worthy" oldtime Germanic Jews of Frankfurt and Berlin. But the accommodating Prussian Monster was also assimilating an Austrian immigrant named Hitler.

This Hitler did not like the new "Jewish" German republic, but he was no monarchist when on either side of the Austro-German frontier. To him, the erstwhile royal families of Germany and Austria were just so many "Cohenzollerns" and "Mishapsburgs." He dedicated his life, for what it was worth, to fighting the Versailles peace settlement (or *Versailles Diktat*), and with it, that of St. Germain. He later went even further than Bismarck in the prussianizing of the Germanies, wiping out states-rights and historical sectionalism after 1933, substituting some 47 "gaus" or prefectures as administrative districts, on completely revised lines, and personally appointing nearly half a hundred *Gauleiters* (or viceroys) to rule over them: the Bavarian Goering for Prussia proper, old Epp for Bavaria, an especially tough bruiser for radical Saxony, savage Heines for Breslau, Roehm (from Bolivia) for the militia, Goebbels for Greater Berlin, Julius Streicher for Nuremberg, and so it went. General Franz Epp, also Bavarian, was a veteran African colonial campaigner, rare among Germans.

Goering, Rudolph Hess, out of Egypt, Walter Darré, from the Argentine, Erard Milch, Dr. Robert Ley, Ace-star Udet, were former war flyers in the Hitler entourage. Many of these Nazis were, in fact, born Bavarians, but all of them made excellent "Prussians." Some of them, wars or no wars, liked the English; none of them liked the French, the Hapsburgs, or the then (1919) newly arriving East-Jews. They were restless characters, postwar figures out of Erich Remarque or Scott Fitzgerald, akin to England's contemporary "Black-and-Tans." Horst Wessel, one of their hero-martyrs and latterday saints, was supposed (by his bitter communist enemies) to have played a piano in a house of ill-fame, but the same has been remarked of certain New Dealers. Wessel wrote the

sinister-celebrated Nazi hymn: "*Die Fahne Hoch.*" And in 1952, as Soviet East Germany organized a so-called Red Wehrmacht said to aim at totalling hundreds of thousands of men, the song—significantly—was revived, though Horst and Hitler slept.

In the spring of 1919, Bavaria actually went Bolshevik, despite its Catholic conservatism. Hitler, demobilized after the war, was living then in Munich, and had a first-hand view of a red regime in action. He did not like it. In fact he disliked it so much that the whole episode, and its backwash, were instrumental in bringing him to supreme power.

The German troops were streaming home from the front, discontented and ripe for mischief. Every sort of conflicting political theory was wafted about in the air, to the utter confusion of tired, untutored brains. The "moderate" socialists gathered in the Loewenbrau, while the socialist radicals laid their plans in the famous Hofbrau, afterward so popular with Princeton students. Communists consorted in the Spatenbrau, and anarchists in the Pschorr. Here were hatched all sorts of beery plots; "these places each had their contingent of young men trying their hands at saving the world, and of elderly admirers who were shocked and delighted with the audacity of the young." Every speaker of each viewpoint was duly applauded.

The most influential man in postwar Munich was Dr. Kurt Eisner from Berlin, a bearded Jewish patriarch, and the former editor of the socialist *Vorwaerts*. He enjoyed political disturbances, had been in prison, and like other Berliners, pronounced his G's as Y's. Brilliantly intellectual, he was humanitarian and idealistic, and not as radical as many of his contemporaries. His sarcastic wit was devastating, his eyes were feverish burning coals, and his hair he wore long. He looked like a cartoon of a professional agitator.

Eisner became Bavaria's "uncrowned king," head of the local Soviet of "Workers, Soldiers, and Peasants," and later Premier. Although a Prussian himself, the radical leader began to intrigue against the supremacy of Berlin, became altogether too friendly with the victorious Allies, and stressed his pacifist record in the

desperately fought war just over. Referring to Eisner, someone remarked that Bavaria was "prussianized even in its anti-Prussianism."

Hitler, back from the trenches and down and out at this time, "despised the soldiers' spokesmen. The loudest of them was a common sailor, Rudolph Egelhofer, sentenced to death for mutiny by a court-martial just before the end of the war. If the 1918 revolution had been one day late, Egelhofer would have been a dead man. But the rebellious soldiers were just in time to save him and there he was in Munich, boasting of his record as a traitor."

Hungary went red for a time in the spring of 1919, and this increased the determination of the radicals in Munich. Kurt Eisner was murdered by a young Bavarian aristocrat named Count Tony Arco-Vally, whom many considered crazy, but the Bavarian leftists still demanded a Soviet dictatorship like that of Bela Kun in Budapest. They even shouted for a break with Berlin and the "pig-prussies." Bavaria became officially a Soviet state, in nominal alliance both with Soviet Russia and red Hungary. Everywhere in Munich, crimson posters howled at the bewildered citizens, and told them to love one another and be quick about it! The 30,000 unemployed cheered for the new order.

Mutineer Egelhofer became commander-in-chief of the Soviet military forces of Bavaria. He demanded that all citizens turn in their privately owned weapons within twelve hours under penalty of death. Prussian troops began to enter Bavaria from the north, heeding the agonized cries of the Munich "moderates." The conservative peasants began to boycott the chaotic Bavarian capital, which needed rural foodstuffs badly. Their priests denounced the Soviet regime as "atheist" and "antichristly." The Bavarian reds, with the able Eisner gone, needed a real leader and there was none. Berlin, by this time, was really angry.

The Central Executive Committee of the Soviet Munich consisted of fifteen flustered members, then thirty of them, and later three. They socialized banks and industries but in one little skirmish Hitler seems to have routed a trio of reds with a revolver. By this time, the Prussians

had reached evil Dachau, ten miles outside of Munich, where the improvised red soldiers of Egelhofer went to fight them. Women intervened like the Sabine ladies of antiquity, and many of the busy red troopers were commuting between Munich and the "front." Ernest Toller, noted pacifist and playwright, took command of the little Soviet army and abolished military "orders," substituting instead military "requests." He wrangled with the Prussians, and tried to persuade them to go away. But the men from Berlin could not see it that way.

Toward the close of April, 1919, the invaders advanced on Soviet Munich, surrounded it, and brought on a minor Reign of Terror in the capital, where frightened reds slaughtered the moderates. A final dictatorship of the red army was proclaimed, and some of the more determined radicals raised barricades in the streets "in the best Parisian revolutionary manner." But such last minute efforts proved fruitless, the Soviet defense collapsed completely, and the hard-bitten Forty-First Sharpshooters took over things. "Adolf Hitler, still unknown and a human zero, stood around and watched the march, wondering what the morrow would portend."

Kurt Eisner and the Jews were blamed for the untidy red experiment. Hitler obtained a position as political lecturer to the victorious Forty-First. Old-fashioned nationalism took the place of Bolshevik radicalism. "Marx was thrown off his marble pedestal, and once more Nietzsche was in vogue." An observer declared that the communists and anarchists now were fallen angels, and that their life was hell. Patriotism swelled in every Bavarian breast, "Prussian" patriotism, not the localized variety sponsored by Dr. Kurt Eisner and his group; and Munich became the home of the Nazi movement, which was founded in the same wild year as Versailles, St. Germain, and Kurt Eisner: 1919.

Hitler became the seventh charter member of the Nazi party, which then had 7½ marks in its treasury. To the Allies, Germany owed \$33,000,000,000. The few paltry marks were to outcancel the billions of dollars, and within 20 years were to cost the world a pretty *additional* penny!



A Platoon Leader of the 45th Reconnaissance Squadron presents his ideas on an old training aid. The sand table, an old Army standby has always proven that . . .

ONE PICTURE IS WORTH 10,000 WORDS

by **FIRST LIEUTENANT RICHARD T. O'BRIEN**

The Lieutenant is given a mission—Erect a portable sand table to be used for instructing tactics classes directly on the ground where the problem is to be conducted. Here is one solution which might help you to improve your quality of instruction.

Fill a ¼-ton trailer with approximately twelve inches of sand and haul it to whatever training area you are to use for conducting small unit tactical problems.

The accessories can be constructed from material within the company. The vehicles, houses, factories, and pillboxes are all made from scraps of wood. The signs and symbols were cut out of manila folders. The roads are shown by white engineer tape and the streams are strips of blue cardboard. The bridges are carved out of GI soap. Trees and grass are made by using the local foliage in the area where the problem is located.

In the top photo the platoon sergeant is briefing his squad leaders. It took him about

twenty minutes to set up his problem. The sand table terrain is a miniature laid out to portray the actual terrain in the immediate vicinity where the application phase of the problem will be conducted. Notice that the terrain includes ridges, woods, streams, bridges, roads, and buildings. The attack arrow in the lower left hand corner indicates the direction of attack against the enemy positions.

In the lower photo the author looks over the accessories for the ¼-ton trailer sand table. They can be carried easily in two cigar boxes. The friendly vehicles and symbols are to the reader's right of the engineer tape. The symbols are white. The miscellaneous items and enemy vehicles and symbols shown to the right of the tape, can be carried in one box. The enemy vehicles have white tops, the symbols are painted red. The accessories estimated for one ¼-ton trailer sand table to be used by one platoon or less are listed.

Friendly vehicles and symbols:

- | | | |
|-----------------------------|--------------------------|------------------------|
| 3 squad area symbols | 2 OP symbols | 2 machine gun symbols |
| 1 platoon area symbol | 1 platoon CP symbol | 1 accessory box |
| 3 directional attack arrows | 2 minefield symbols | vehicles for 1 platoon |
| 2 entrenchment symbols | 1 rocket launcher symbol | |

Enemy vehicles and symbols:

- | | | |
|------------------------|---------------------------|----------------------------|
| 5 ¼-ton trucks | 2 trucks | 2 OP symbols |
| 2 command cars | 2 pillboxes | 3 squad area symbols |
| 3 tanks | 2 rocket launcher symbols | 1 platoon area symbol |
| 1 mortar ¼-ton vehicle | 2 machine gun symbols | 3 attack directions arrows |
| 2 anti-tank guns | 2 minefield symbols | 1 accessory box |
| 1 half track | 2 entrenchment symbols | |

Miscellaneous Items:

- | | | |
|------------------------|--|---------------------------------|
| 2 houses | 20 pieces 1" x 6" blue card-board strips for streams | 1 directional marker |
| 1 factory | 2 bridges | 1 roll engineer tape, for roads |
| 1 piece foil for lakes | | |

FORDABILITY

Here is the second and concluding article on the selection of sites and fording techniques for tanks and organic vehicles in a battalion fordability school

SINCE there is no assurance that a ford with all the qualities of a good ford will be found, many crossings will be made on poor but passable fords. The manner in which the fording is conducted makes a substantial difference in the efficiency of the ford and proper driving may make the difference between success or failure. Wet banks and muddy, soft bottoms are chronic problems. Water depth may be a problem for a portion of the platoon and not for the rest.

There are various ways of overcoming the difficulties to be encountered in fording. Since traffic on the stream bottom may cut it up, causing a lot of soft mud to be formed, the lightest vehicles should cross first. It may be possible to cross on a broad front, so that all vehicles do not use the same track. Crossing the tanks at one place, and the wheels at another, is also a possibility in preserving the life of a ford. Getting a tank across and towing the others or *daisy-chaining* three or four $\frac{1}{4}$ -ton vehicles and towing them in a train are methods of helping the wheels through deep water. It is expeditious, if a ford is doubtful, to attach a cable to the towing hooks of a vehicle *before* it enters, making recovery of a vehicle much easier, should it bog down or drown out.

The $\frac{1}{4}$ -ton truck will take the least depth of water of the vehicles in the reconnaissance platoon. The figure 30 inches has been listed in the technical manual, and this is based on slow careful movement of the vehicle through the water, without ex-

cessive fan spray, with crankcase and oil filler valves closed. Going over this depth to an absolute maximum of 36 inches may be undertaken with the fan belt off, to eliminate the throwing of spray into the air intake, and drowning the engine. Always enter a ford in *low-low* gear, with 4-wheel drive engaged, and the fording knob on the dash pulled out, regardless of the anticipated depth of the water. Ruts or holes in the bottom can plunge a vehicle in deeper than was expected and care must be taken to avoid damage to the engine. Go in over the bank slowly, and drive not over four miles an hour in the water, less if there is much current, to avoid forming a bow wave. Keep a steady application of power, and do not spin the wheels, or they will dig down in a soft bottom. If necessary turn so as to approach the far bank at right angles. As the climb up the far bank begins, slowly add power, but try not to spin the wheels. If there is room, do not follow the track of preceding vehicles but pick a path that has not yet been rutted. Once clear of the ford, move on away from the bank, to avoid holding up the following vehicle.

The half-track can traverse only slightly more water than the $\frac{1}{4}$ -ton, the manual listing 32 inches. This vehicle can also exceed the 32-inch depth by disconnecting the fan to avoid spray. Absolute maximum depth is 43 inches. The performance of the half-track in soft mud leaves much to be desired and it should be regarded as the least capable vehicle

in fording the platoon. Driving the half-track into and out of the ford is accomplished in the same manner as the $\frac{1}{4}$ -ton truck. If exit from the ford is over a steep bank, overlooked in selection of fords, especially along streams which are marginal as to fordable depths, backing the half-track across so that the tracks climb the bank first is an aid, for if the tracks spin while on the soft bottom the half-track will immediately bog down. Crossing the half-track in the same place as the $\frac{1}{4}$ -ton crossings, after they have crossed, is the best method. Do not have the half-track follow tanks; the bottom will be cut up too badly for the track to make it if it is not of a good firm gravel.

Light tanks and medium tanks have approximately the same fording capabilities, except that the engines of the M-47, T-18, T-41, and M-32 are less sensitive to immersion than those of the M-24 light. Tanks can get in and out over banks which completely stop wheeled vehicles and their four-foot fording depth capability is more than will be needed in crossing the vast majority of streams.

Entry can be made over very steep banks, six to eight feet high, but a lower, more sloping bank is needed for exit. Creeping speeds are required. Entry must be made as slowly as possible or a considerable bow wave will be generated, filling the driver's compartment with water unless buttoned down. In making entry over a steep bank, the drop into the water is eased if a clump of small trees growing on the bank is pushed

over by the tank into the stream. The bank, if steep and high, will cave while the trees are being toppled, lowering the tank gently into the stream. Approach the bank at right angles to avoid tipping or canting of the tank, unless the slope is gentle. This is especially important in the M-24, as the air intakes are at the outside rear of the hull and canting the tank while in the water may cause one engine to drown out.

In making exit from a ford in water nearing four feet in depth over steep banks, additional precautions should be observed. Add sufficient power as the tank begins to rise up the bank to assure exit on the first try. A lot of water will be carried up the bank by a tank, making the bank slippery. In this, steel track is superior to rubber, since it digs in and gets under the superficially wet bank surface better. If the bank is quite steep and the tank cannot make it up, there are two courses of action open. The tank can be backed down and a crossing tried at a different place, or a turn can be made and the tank run up or down stream until an exit can be made, if the bottom is solid enough.

At this point another danger arises. If an M-24 tank is clawing its way up a very steep bank and is allowed to slip back into deep water, tail first, there is great danger that the air intakes will be submerged, killing the engines. This danger does not exist in the M-47, T-41, T-18, or M-32, as their air intakes are located well forward.

The 2½-ton truck is capable of fording as great a depth as any other vehicle in the battalion. However, due to the heavy weight of the loaded truck and the frequency with which the 2½ must tow trailers, it is not usually an easy vehicle to ford. The present truck does not have good flotation in the soft stream beds and will bog down readily. In order to get the 2½-ton truck through, a low, shelving bank is a necessity on the exit side of the ford. In low range this truck is quite powerful and will spin the wheels if sudden or too much power is applied. This will cause the truck to dig in deeply and must be avoided. Driving methods for entering the ford with the 2½ and leaving the ford are the same as for other wheeled vehicles. The

height of the fan is an advantage on this truck, as it clears all but the deepest of fords.

The ¾-ton truck fords very similarly to the ¼-ton except that it will pass greater depths. Trucks which have winches are assisted greatly in getting through difficult fords. Crossing a tank first and using it as a hold-fast for the cable is a handy expedient.

I discovered that, having written a rather extensive paper on the subject of ford selection and fording, I was well prepared to give the classroom work which followed. Where a manuscript such as this will not be written for most instruction, when you are feeling your way along in a subject with which you are not familiar this type of preparation is indispensable. I found too that having had a couple of college courses in Geology was a great help.

Of course, while writing the foregoing, preparations were going on toward the presentation of the demonstration part of the school. I had been assigned a reconnaissance platoon from Baker company, and the platoon leader was my assistant for the course. Initially I went through the steps of selecting a ford site, using all the methods discussed above. I was further limited in making my selection in that it had to be within a few miles of the home station in order to be able to move the students to the location and still have plenty of daylight to carry out this demonstration. Finding a ford which would show up the various capabilities and limitations of all the vehicles in the battalion was a rather large order in the beginning and I was pressed to find a suitable location. I finally found just what I was looking for, while on an aerial reconnaissance flight. It was within 4 miles of the Battalion's home station, accessible by road, had a good existing ford and a wooden footbridge nearby. Also, by fortunate coincidence, the ford appeared on the sets of aerial photographs which I had on hand for training purposes.

After making the tentative selection, it was necessary to obtain trespass rights to the land and then to test the location with some vehicles to prove that the ford would do what we wanted. At first we weren't sure in our own minds just what the end product of our demonstration would

look like and it took a good deal of trial and error to firm up our scenario. The platoon leader, Lt. Reed, took his platoon and vehicles to the location time after time. We tried plan after plan until, slowly, the picture began to build up into what looked like a suitable demonstration. In all, some twelve piecemeal trials were held until we were ready to go into the rehearsal stage.

Of course we learned a lot about fording from these preliminary efforts. We were beset with cold, snowy weather and fog, and worst of all, the river level fluctuated rapidly from day to day. Before long our whole lives seemed to revolve around that first look at the water level each morning. We had vehicles bogged down, drowned out, hung up on banks and otherwise *hors de combat*. But the experience and thought-provoking failures paid off in the end, for we did work out a most suitable demonstration.

Since we were attempting to show the capabilities of various vehicles under a variety of conditions, our demonstration was strung along several hundred yards of river bank, each locality chosen for a specific vehicle. We determined exact locations, to the inch, for spotting our vehicles prior to the arrival of the troops. We provided stand-by reserve vehicles in case of a last minute mechanical failure. A tank retriever and wrecker, ambulance, radio vehicle, and public address system were brought out. We had rehearsal, rehearsal and rehearsal. By our deadline day, a month from the starting day, we knew we were ready.

On the big day, our snake-pit classroom was packed with officers and NCO's of the Regiment and from other organizations which had been invited to send representatives. I conducted the three-hour conference, following lesson plans prepared from the instructor's manuscript. I was able to employ as training aids: the chart I had prepared, maps and air photos which were handed to the students to use in practical work exercises in ford selections, and a balopticon. A blackboard and chalk were ready and used to illustrate impromptu talking points as well as previously planned and prepared sketches. It was gratifying to note that the students were able, during

the practical work, to pick out very logical ford site possibilities both from the 1:50,000 maps and from the air photos. However, it is significant that while the places they chose were definite probabilities, no one was sure of his choice until he had made a ground check. We had the opportunity to do this when we went out for the demonstration because of the close proximity of those places chosen on the map to our actual site.

After lunch, a convoy was formed up and the student body moved to the demonstration site. We had directional signs along the way to aid any stragglers, and radio contact was maintained with the home station. At the ford, signs numbering the sites were staked out, and by using the PA system, control of the spectators was easy. (Incidentally, a good battalion draftsman is a great asset in anything like this, for neat artistic signs do a tremendous amount in dressing up your demonstration.) I did not contemplate the use of bleachers because of the distances involved and I thought it better if the spectators could move right down to the river bank to get a good look at the vehicle crossings. This proved right in this case but I was on thin ice in making this decision for a crowd of this size, approximately 150 persons, can be awkward to control. I believe that the signs were my

greatest help, plus the fact that we timed the successive stages of the demonstration to a pace that kept something moving all the time and everyone was interested. There was a minimum of milling around.

Our vehicle crews were ready, standing at stations by their vehicles, confident and keyed up at finally arriving at the wet run. They were a capable and enthusiastic group of men on that day. The Signal Corps sent two photographers at our request and did a thorough coverage of the entire demonstration. We had previously planned to take 35mm movies of the demonstration for use in future classes, but the camera froze up in the cold weather.

The platoon leader and his sergeant directed each vehicle through its test. The first was the 2½-ton truck which we put in the ford from a high, steep bank. He crossed through surprisingly deep water and attempted to run out the same bank. It proved too high and too muddy so he chose a more suitable place and came out under full power. We did not have the truck loaded for this demonstration nor did we have a trailer, but the running commentary which I conducted brought this to the attention of the class and they were able to predict the added effect of these loads.

Next, at a different location, the ¼-ton truck was run through at con-

siderable depth, but drowned out from the effects of the fan throwing water into the air intake. We had a cable attached to his towing hook and a retrieving ¾-ton ready to take him out right away. Then another ¼-ton, with the fan belt removed, ran through the same place with no difficulty whatever.

On the heels of the ¼-ton, our ¾-ton truck made a run through the same place. This was an existing ford and quite passable to any but the first ¼-ton truck, and offered low, sloping banks on both sides and a good gravel bottom. On the return trip the ¾-ton did not come out the easy place but turned downstream a little and showed the effects of a steeper, and muddy, soft bank. He did not make it out and had to back away from the bank. Here we had a bit of unrehearsed demonstration, for the driver missed his turn by about a foot and dropped into a deep spot in the river, which we knew about but had previously avoided. He went in until his fan threw water over the engine and poured it out over the fenders, but although the engine sputtered a few times it kept running and the truck made it out.

The half-track was poised and ready atop a four foot, nearly vertical bank from which he was to drive into about a foot of water. The bottom at this point was fairly solid, but our experience had been that if, as the rear end of the track was going over the bank, he bogged down on the little pile of mud just at the water line, then he had to be dragged out. Knowing this, the driver gunned the track just as the rear end settled, and he went on into and across with no further trouble. Coming back, up the same bank proved impossible going forward. The tracks spinning in the gravel and mud bottom threatened to dig the vehicle down until a tank retriever would be needed to get him out. The front roller, instead of lifting the front end, was simply pushed into the soft bank and the track was helpless. Reversing and getting out before it was too late, the half-track was then taken up the same bank in reverse. Because of that soft spot at the water line it was necessary to hit the bank fairly hard in order to have sufficient momentum to carry the rear end of the



Steeper banks can be used to enter the water as demonstrated by this M24 tank.

vehicle high enough up the bank to give the tracks a footing on firm ground. A man in the rear of the half-track directed the driver, who is nearly blind in backing a half-track. We considered this a very successful portion of the demonstration.

Immediately following this, the group was moved to site four where they saw the M-24 light tank waiting across the river from them. The tank was sitting on a bank about five feet high and very steep. This particular point was on the outside of a slight curve and typified the sharp-rimmed bank being eroded at the water line, with the characteristic pile of mud resulting from sloughing off of the bank. The water was 3½ feet deep at the entry point. Easing over the bank, the steel track holding well, the tank was put in gently and crossed. On the near bank there was a good deal of cut up mud, the result of our many trial runs, and the driver had to hit it just right to make it out on the first try, which he did. He then moved into the background for the next part of his demonstration. It was important to have him move far enough away that his engine noise did not interfere with the talk. The tank then crossed at the same point.

We had this tank completely drown its engine while attempting this during a rehearsal. He had run the front end up the bank, lowering the tail just at the deepest part of the stream, and got water into the air intakes. The result was that the tank rested in the stream for over two hours until we could get a retriever. Of course the hull flooded in this length of time and we had to quickly remove the ammunition to prevent damaging it. This got some men wet in the icy water and pointed up a lack of prior planning. In our demonstration we had anticipated all these troubles and didn't have them.

I had the tank commander hold his tank in position just short of drowning the engines and showed the class the danger that existed in going on, and then sent the tank back and out at a better place. He made one final, complete crossing at site five, entering over a steep bank into four feet of water and coming out on a grassy bank on the opposite side.



The value of a fordability school is proved by actual fording operations in Korea.

Our M-47 from the tank company had about the same task, initially, as the M-24, except that it entered over a higher, steeper bank into about four feet of water. He came out the same muddy place and recrossed to the opposite high bank. Of course he could not climb the bank but he proved that while he put the front end well up the bank, with the engine compartment in the deep part of the river he had no trouble with the engine taking in water. Turning downstream in the river, the M-47 cruised until he found a spot to make an exit attempt which also was unsuccessful, as rehearsed, because of rutting by previous tank crossings. He finally made it out further down, putting on a fine demonstration of cautious driving through several feet of water and maneuvering on the river bottom. The M-47 handled beautifully and came out with a great surge of power and much splashing of water.

The driver had gotten wet in the initial entry into the river, since he could not hold the tank for as slow a passage down the steep bank as the light tank had made, and a considerable bow wave swept over the hatch which was open. However the ambulance was standing by with heaters running and warm blankets ready and the driver was immediately put in it and stripped of his wet clothing. We had no casualties and no cases of exposure sickness during the

entire preparation and demonstration.

In evaluating this demonstration, I was well satisfied with the way it ran and from the comments which have been passed to me since, they have indicated that it fixed in the minds of the students a graphic picture of the fording capabilities of the reconnaissance platoon and other vehicles in the battalion. This, of course, was my mission and I feel that the school was successful and the mission was accomplished.

The work which went into preparation of the demonstration, literally days and days of practice and rehearsal, for the 75 minute final show, paid off in training value. The troops came away from the school confident in their ability to select and use fords and in the capabilities of their vehicles. This is a spirit vital to armored leaders who must use aggressive, skillful application of their *know-how* if they are to exploit to the maximum their units' vital mobility, and this *know-how* comes from training. Present plans call for inclusion in platoon training of fording exercises, to be based on the material presented at the school.

This realistic and practical training is the type of thing that distinguishes a first class fighting outfit and while I did the spadework and received recognition for it, the real compensation will go to the battalion which is closer to complete accomplishment of its mission—Success in Combat.

HOW WOULD YOU DO IT?

situation **1**

You are a tank company commander in the 201st Tank Battalion, 90-mm Gun, 201st Infantry Division. Your company has been attached to the 11th Infantry Regiment. When reinforced with infantry, your company will become a task force for a special operation. A forward observer from the artillery battalion (105-mm towed) supporting the regiment joins your company. He explains that for this operation he can do a better job of observing from one of your tanks.

Sure Lieutenant, we can fix you up with a tank but you might have a radio netting problem.

Captain, have you a spare tank I can borrow?

problem **1**

As a tank company commander, what would you tell the artillery forward observer about radio netting between your tanks and the artillery fire direction center?

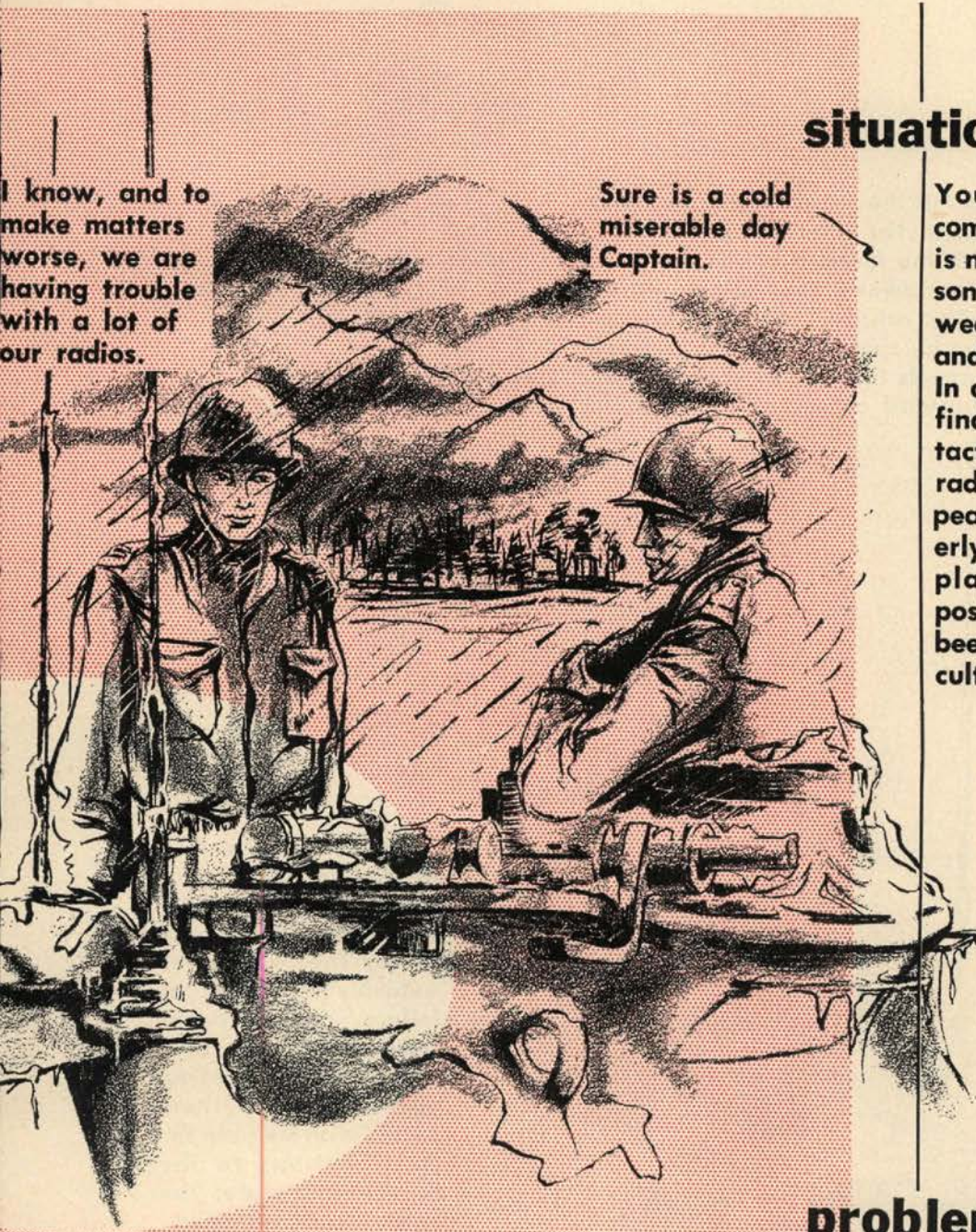
AN ARMORED SCHOOL PRESENTATION

author Major E. Kobbe

artist Pvt. H. A. Reade

I know, and to make matters worse, we are having trouble with a lot of our radios.

Sure is a cold miserable day Captain.



situation 2

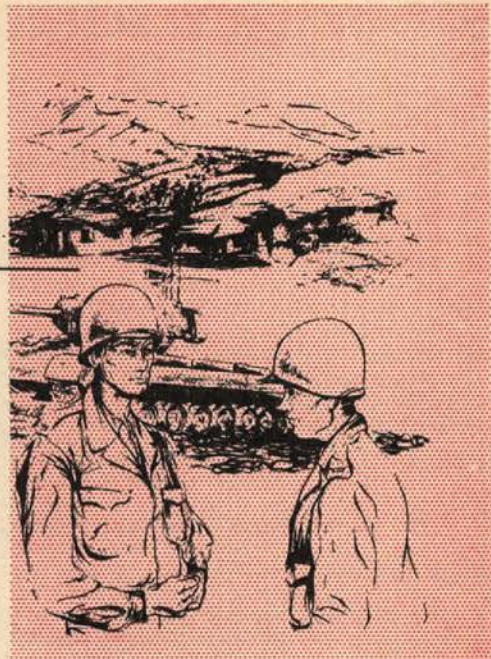
You are a tank company commander. Your company is now experiencing the season's first day of freezing weather. It has been raining and snowing intermittently. In a short space of time you find you are unable to contact your platoon leaders by radio although your set appears to be operating properly. You check with the platoon leaders at their positions and find they have been having the same difficulty within their platoons.

problem 2

Look at this illustration. What is the probable cause of the radio difficulties?

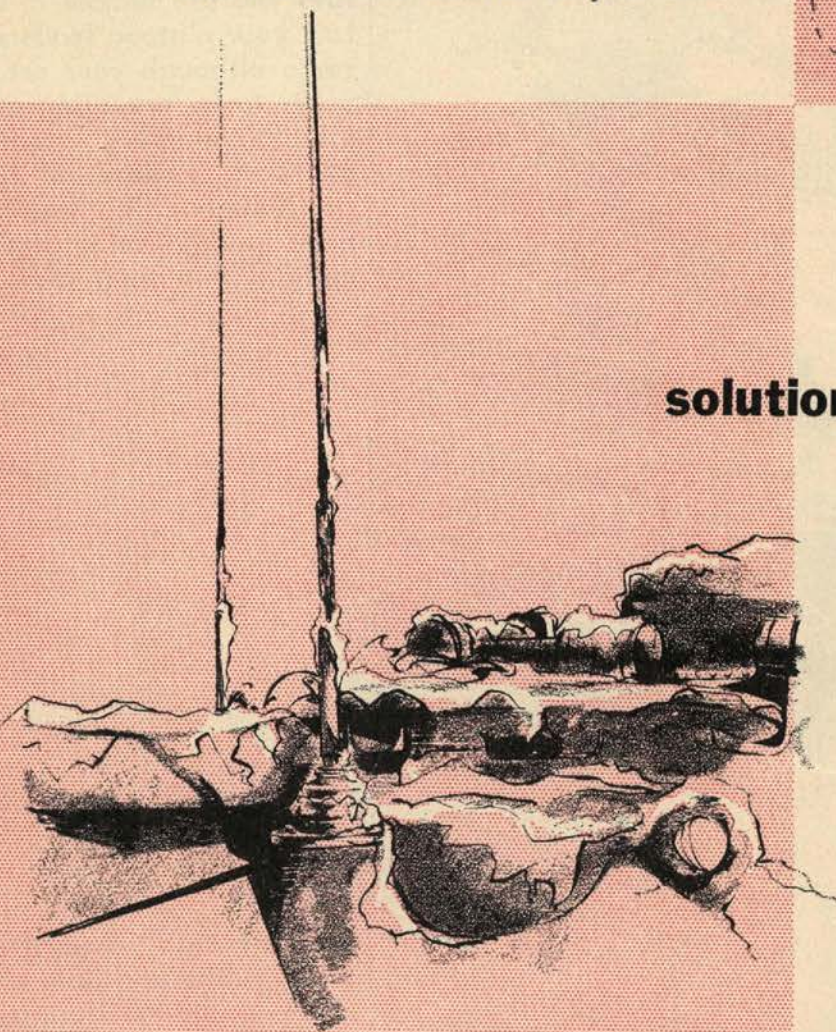
solution 1

You should tell the forward observer that tank radios in the infantry division will not net with the forward observer's artillery battalion radios except on ten overlap channels. The artillery battalion fire direction must be operating on one of these overlap channels in order to communicate with the forward observer in your tank.



solution 2

Large numbers of radios, in one organization, do not fail mechanically at one time. Some outside factor that happened suddenly has caused the failure. You are right—the weather! You check the antenna mounting bases and find them coated with ice from the mast sections to the turret armor plate. The antennas are grounding out over the porcelain insulator. Your tank commanders must keep the antenna mounting bases free of ice as long as the weather is cold and wet.



65 Years Ago

"A brigade marched one day from Beauvais to Gisors, took part in the capture of that place and returned to Beauvais in the afternoon, 38 miles; the next day it moved to Gournay and back, 31 miles; the fourth day it moved to Breteuil, where some squadrons made several charges, and it then returned to Beauvais in the afternoon, 38 miles.

"But how seldom we dared to demand such efforts. How many times we lost contact with the enemy. Why was he allowed to fall back upon Paris? Why did not swarms from our mass of cavalry envelope him and cut the railways in his rear? Why did we not scout thoroughly during the winter?

"Had our leaders felt capable of covering 30 to 60 miles a day with sufficient masses, could the armies that were to deliver Paris have sprung from the earth and been upon us before we suspected their existence?

"Icy roads! We have them at home; why have we not learned to move upon them? SEYDLITZ himself would have been helpless with cavalry horses that could not move on ice.

"A few brigades who had learned this accomplishment did, however, scout on the ice and the others might have done as much."

German Ideas on Cavalry

2ND LT. FRED'K S. FOLTZ

50 Years Ago

The success was due to the celerity of our movements, causing surprise, and never for a moment letting up after the enemy were on the run, in spite of good defensive positions which, if they had been held by a small and determined force, would have seriously delayed the command. They learned to have a deadly fear of the quick moving cavalry, always on their heels, giving them no time to rest. In this campaign, as no flanker could be used, and the command marched in column of two's, Colonel Hayes directed, when an attack was made on one flank, all men on that flank should pass their reins to the man on the inner side, then dismount and form line toward the enemy either on the flank, or form line to the front, if the attack was from the front. It required but a few seconds to have a well established line for attack. If it was necessary to reinforce it, half of the other troopers would link horses, and soon give a good supporting force. Our drill regulations were modified to suit the peculiar conditions.

The Cavalry in Southern Luzon

COL. J. A. AUGUR

25 Years Ago

The Combat Power of Cavalry! How little understood by the people of the country and by even the majority of military men. When we speak of infantry or artillery we have a very definite idea in mind of the

functions and even the power of these arms in battle. But few people indeed, unless they are not only students of the military art but experienced, progressive cavalrymen who have handled the two elements—fire and maneuver—of modern cavalry—understand or fully appreciate the true value of this cavalry. . . .

Cavalry—the one swiftly moving ground force which can negotiate any form of terrain—increases in value as it makes use of its principal assets by utilizing mechanized units of equal and greater mobility.

Cavalry now has many forms of its three types of action—dismounted, mounted and combined action. When restricted solely to maneuver elements, combat strength was dissipated by sacrificing maneuver power for fire power. One of the best ways to defeat maneuver elements is to pin them to the ground and, conversely, fire elements can best be defeated while they are moving. By adding fire elements to cavalry the maneuver elements are freed to make full use of the great power of maneuver.

The value of cavalry in reconnaissance and counter-reconnaissance is acknowledged, but its value as a fighting force in war is not fully understood. Fire and movement is the gospel of infantry and, though mounted cavalry may occasionally attack without fire, fire support is the basis of all attacks. Fire, Speed and Surprise is a good attack gospel for cavalry; for every moment's delay in the slow moving dismounted attack increases the loss of life and gives the enemy time to counter the attack. Adequate fire support is required by both infantry and cavalry.

Cavalry Combat Packs

LT. COL ALBERT E. PHILLIPS

10 Years Ago

In engagements of a maneuvering character, the mobility of cavalry must be exploited fully with a view to striking surprise blows at the most vulnerable spots. For instance, it always brings good results, after breaking off the battle suddenly in one sector, to regroup the cavalry under the cover of darkness in an area eight to ten miles away, and then strike quickly an unexpected blow on the enemy's flank from a new direction.

Experience shows that the main forces of large cavalry formations should not become entangled in long drawn out engagements in the same sector, as this paralyzes its mobile power and dooms it to tactically passive actions.

Security in general, and antiaircraft defense in particular, is of especial importance for cavalry. Its most dangerous enemy is hostile aviation, especially in an open country. Cavalry must be trained in the use of every possible method of concealment, and should be able to disperse quickly. When the enemy's aviation attacks cavalry on the march, all means of fire power, antiaircraft guns, antitank rifles and rifles must be used fully.

Employment of Cavalry in Battle

COL. GEN. O. GORODOUKOV
Red Army

NEWS NOTES

Reserve and Guard Units to Train at Hood

Maj. Gen. L. L. Doan, CG of Fort Hood and the First Armored Division, recently announced that Fort Hood will be host to three National Guard and two Organized Reserve divisions this summer. These civilian components will be quartered at North Fort Hood for their two-week training period.

The 90th Infantry Division and the 112th Armored Cavalry Regiment (Texas National Guard) will lead off, arriving at North Fort Hood on May 31. The 49th Armored Division (Texas National Guard), the 36th Infantry Division (Texas National Guard), the 75th Infantry Division and the 45th Infantry Division (Oklahoma National Guard) will follow at two-week intervals.

Initial Washington Chapter Meeting—A Huge Success

The meeting in April, the first of Officers interested in Mobile warfare, located in the Washington area was a huge success. Highlighted by short speeches by General Devers and General Crittenberger and a most informative talk by Lt. Col. George Peterson, Chief of Research and Development from the Detroit Tank Arsenal, plans were made for a second meeting to be held in June. Col. Peterson spoke on "Current Trends in Tank Research and Development."

The next meeting is scheduled for 4 June 53 to be held in the Rose Room of the Naval Gun Factory. Maj. Gen. R. W. Grow will be the principal speaker. Details can be obtained by contacting Captain C. R. McFadden, Jackson 7-9400, extension 409.

Patton Memorial Stamp

The Postmaster General has announced that a memorial stamp honoring General George S. Patton, Jr. will be issued some time this year. The date of issuance has not yet been determined. Sponsor of this memorial stamp issuance is the World War Tank Corps Association.

Mathew Brady Honored

Mathew B. Brady, famed Civil War photographer and the first American to prove the military value of photography, was honored recently by both the military and his profession at ceremonies at Carswell Air Force Base, Fort Worth, Texas.

A Convair RB-36 reconnaissance long-range bomber of the Strategic Air Command was christened "Mathew B. Brady" and officials of the National Press Photographers Association participated in the ceremonies.

Covering General Irvin McDowell's Army of the Potomac, Brady and his assistant manned two photo darkroom wagons. The two-horse wagons, also equipped with chemicals, negative plates and cameras, were nicknamed "Whatizzits" by the Federal troops.

Ninety-one years ago, during the Peninsular campaign (May, 1862) of the Civil War, Brady recorded for posterity the first experiment in aerial reconnaissance, Professor T. S. C. Lowe, first air chief, ascended in a balloon over Mechanicsville, Virginia, and reported troop movements of the Confederates around Richmond to General

G. B. McClellan, Union Commander.

When Brady photographed the airborne balloon, Confederate rifle and artillery fire opened on Lowe—the first "ack-ack" experienced by an American combat aviator.

In 1951, a Convair RB-36 flew a non-stop mission for 51 hours and 20 minutes without refueling. It is equipped with 14 cameras and powered by 10 engines, 6 conventional and 4 jets. Like the B-36 atomic bomber, it has the greatest fire power of any known bomber yet developed, 16 20-millimeter cannon. One of the 14 cameras aboard the 45,000 horsepower RB-36 was a 42-inch focal length lens.

Brady, who spent over \$100,000 photographing the Civil War, died penniless in New York City January 16, 1895. He was 73 years old. He was buried in the Congressional Cemetery at Washington, D. C.

OCS For National Guard

In a move to increase development of officer personnel for the National Guard, a special Officer Candidate

TOP COMMAND CHANGE



Maj. Gen. Bruce C. Clarke
To Commanding General, I Corps



Maj. Gen. L. L. Doan
To CG, 1st Armored Division

School Course will be conducted this summer at Fort Riley, Kansas, it was recently announced by the Department of Defense.

The ten-week course will be offered at the Army General School at Fort Riley for specially selected noncommissioned officers and warrant officers from National Guard units in all the States, Hawaii, Alaska, Puerto Rico and the District of Columbia.

The purpose of the special summer officer candidate course, according to Major General Earl T. Ricks, Acting Chief of the National Guard Bureau, is to provide a means for qualified Guardsmen, who are unable to attend Regular Army OCS courses because of educational or occupational commitments, to obtain officer candidate training.

Graduates of the course will be awarded certificates of eligibility for appointment as second lieutenants to fill vacancies in National Guard units in the combat arms and services as they occur.

Smoother Tank Operation

A new, sturdier and longer-lived shock absorber, which already has brought smoother, steadier riding to railway cars, has been adopted by the U. S. Army Ordnance Department for its new Patton 48 tank.

The tank shock absorber, or snubber as it is called, is a unit originally designed and developed by Chrysler Corporation engineers for the Chrysler-Design railroad freight car truck, adapted for mounting on tanks. It resembles the familiar tubular shock absorber used on most automobiles, although it is completely different in



Driving home the pin connecting the snubber—results a smoother ride.

principle of operation and, of course, much larger in size.

The tank or railway car snubber depends upon friction of a brake lining type of material, pressing against the inside surfaces of its steel tube, to pro-

vide a constant snubbing action. This does away with the greater complication of hydraulic shock absorbers and the problem, when used in railway or tank service, of their varying rates of snubbing action. The success of the snubber was attested when the U. S. Navy recently put into service 880 special boxcars for carrying ammunition and fragile cargo at passenger train speeds. All of these cars were equipped with Chrysler-Design trucks and snubbers.

"The characteristics which have made the snubber so successful under the severe test of railroad service attracted the attention of the Ordnance Development group and the Army Ordnance people with whom it works in the design of tanks. These engineers were looking for a solution to the problem of failure in tank service of hydraulic shock absorbers, and they found it in our railway truck snubber, which they adapted for installation on the Patton 48 tank."

Mr. C. C. Utz, chief engineer, ordnance, of the Chrysler Engineering Division, who heads the Ordnance Development Department, said that the new snubber provides greater stability for the tank.

"In a tank, which is essentially an armored, mobile firing platform for a gun," Mr. Utz pointed out, "a stable firing platform is important. The new snubber reduces the pitch of the tank under gun firing recoil to a greater extent than any hydraulic type. This insures greater accuracy and requires less re-aiming of the gun during firing."

Mr. R. N. Janeway, head of the Dynamics Research Department of the Engineering Division, which developed the snubber, pointed out that shock absorbers do not actually absorb shock. That, he said, is the function of the springs of the vehicle.

"The shock absorber or snubber converts the energy absorbed by the springs into heat," he explained, "and this heat is then gotten rid of by dissipating it into the air."

Some idea of the work the new tank snubbers do in converting the energy in the springs into heat can be realized by a simple comparison.

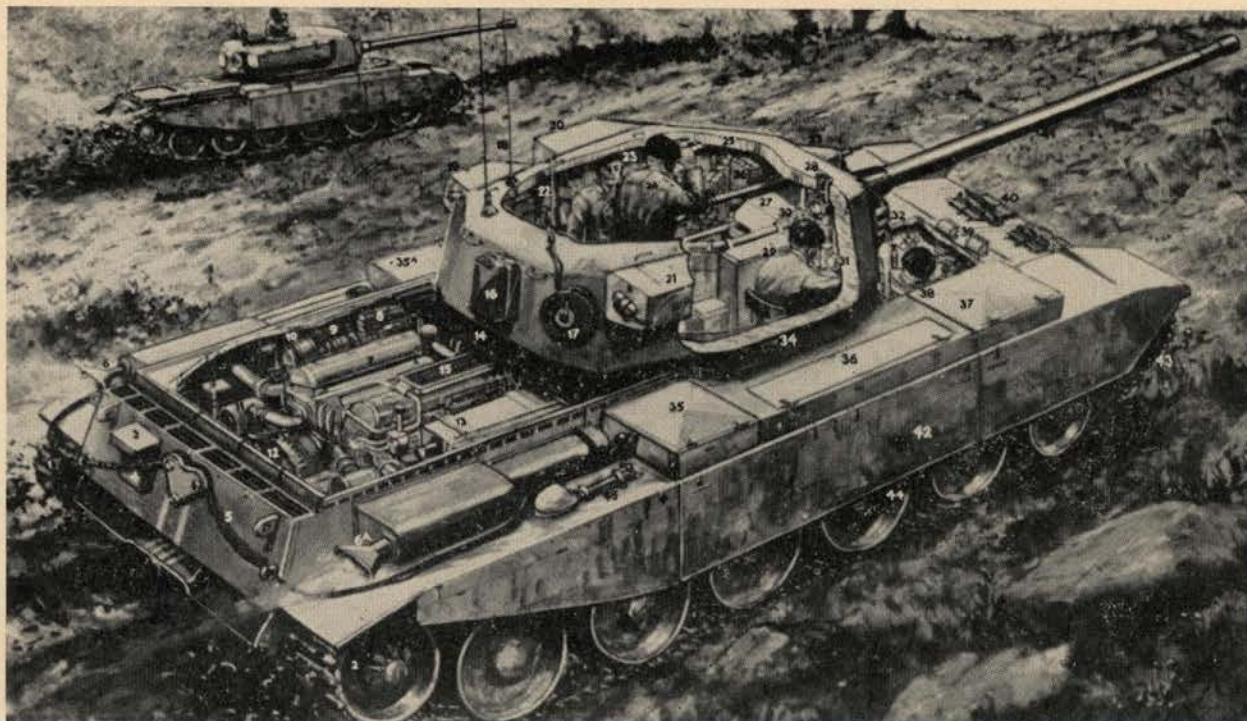
"For instance," Mr. Janeway stated, "operating under maximum capacity conditions, and making 60 up-and-down cycles a minute, the snubbers of a large tank could change spring energy into enough heat in one minute to raise two and a half gallons of water from 70 degrees to the boiling point."

The longer life of the snubbers is demonstrated, Chrysler ordnance engineers point out, by the fact that tanks equipped with them normally go at least 2000 miles without maintenance. Ordnance experts consider 2000 miles of trouble-free field operation in a tank exceptional performance. Hydraulic units, on the other hand, under the severe requirements of tank service, frequently have to be replaced after only 300 to 400 miles of operation.

TO RETIREMENT



On April 30, 1953, Lieutenant General Edward Hale Brooks retired from the Army. Receiving the Distinguished Service Cross in World War I, two Distinguished Service Medals, two Legion of Merit Awards and two Silver Stars in World War II, General Brooks leaves behind him a most colorful and outstanding military career. He received a Bachelor of Science degree from Norwich University in 1916. General Brooks was commissioned in the Cavalry in 1917, fought in three major engagements during World War I, later served in the Army of Occupation. Transferring to the Artillery in 1920, he served with various Artillery units until 1932 when he attended the Command and General Staff School. Upon graduation he was assigned as Professor of Military Science and Tactics at Harvard University. He attended the War College in 1936, after which he was assigned as an instructor at Fort Leavenworth. In 1941 he became Artillery Officer of the Armored Force at Fort Knox and was instrumental in the development of mobile Field Artillery in support of Armor. After commanding the 11th Armored Division, he was assigned to the 2d Armored Division in Europe. The following October, General Brooks assumed command of the VI Corps. Following the war he was assigned to the Fourth Service Command, later as Deputy Commander of the Third Army. Subsequent to a tour of duty in the Antilles, which included Commanding General of the U.S. Army in the Caribbean, he became Director of Personnel and Administration of the Department of the Army. After reorganization of the Army headquarters he was assigned as Commanding General of the Second Army which post he held at the time of his retirement. General Brooks has been quite active in the affairs of the United States Arm Association. He is presently an honorary Vice-President of the Association.



British Information Services

THE CENTURION

Details of the Centurion were recently released by the British Information Services.

The unique feature of the 52-ton tank is its stabilizer. This consists of two electric-magnetic servo-mechanisms which operate both vertically and horizontally and keep the 20-pounder gun and 7.92mm Besa machine gun—the two co-axially mounted in its turret—trained on the target despite irregularities of terrain. This is done by means of rate measuring gyroscopes. Described by the British as the only tank now in production equipped with a stabilizer, the Centurion can fire accurately and quickly.

The ability of the Centurion to fire without slowing down means that in tank-versus-tank warfare it possesses a great advantage. Aimed, rapid and very accurate fire can be returned to any attack instantaneously, while the heavy armor protecting the Centurion

has been proved able to withstand even 85mm gunfire, the standard weapon of the Russian T-34 tank.

Another factor in the Centurion's popularity, according to the British report, is its price of around \$2,800 a ton, which is unmatched by any other tank now in production. This, combined with its other advantages, has brought orders from several overseas countries. Britain is producing Centurions for the Dutch and Danish armies under a \$90 million U.S. offshore contract. The Canadians and Australians have ordered Centurions for their armored forces in Germany and Korea.

It will climb gradients of 35 degrees, and is often jocularly called "the Alpine tank." It can travel approximately 3,100 miles before overhaul. The armor is hand-welded. The Centurion has a Rolls-Royce Merlin engine which develops 635 brake horsepower.

Key to Drawing

- | | | |
|--------------------------|--|------------------------------------|
| 1 & 1A Tracks. | 17 Cable reel. | 32 Smoke grenade discharger. |
| 2 Driving Sprocket. | 18 Three whip aerials. | 33 Besa machine gun. |
| 3 Small first aid box. | 19 Box with turret cover, lifting jack, etc. | 34 Turret armor. |
| 4 Infantry telephone. | 20 Box with camouflage net. | 35 Box with portable cooker, etc. |
| 5 Towing ropes. | 21 Box with net groundsheet. | 35A Box for rations. |
| 6 & 6A Exhaust pipes. | 22 Ammunition for 20-pounder gun. | 36 Box for spares, tools and tent. |
| 7 Engine. | 23 Loader. | 37 Box for tools. |
| 8 Charging set. | 24 Tank Commander. | 38 Driver. |
| 9 Dynamo. | 25 Head-lamp. | 39 Driver's periscopes. |
| 10 Fan. | 26 Machine gun ammunition. | 40 Spare track links. |
| 11 Air cleaner. | 27 Gun breech. | 41 20-pounder guns. |
| 12 Gearbox, clutch, etc. | 28 Periscope. | 42 Wings or skirting plates. |
| 13 Right-hand fuel tank. | 29 Gunner. | 43 Front idler sprocket. |
| 14 Cover plates. | 30 Elevation control. | 44 Bogie wheels. |
| 15 Oil cooler. | 31 Power traverse. | 45 Shovels, etc. |
| 16 Water container. | | |

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THE RIVER AND THE GAUNTLET

THE RIVER AND THE GAUNTLET. By S. L. A. Marshall. 385 pp. William Morrow & Company, New York, N. Y. \$5.00.

Reviewed by
MARGUERITE HIGGINS

Brigadier General S. L. A. Marshall has produced the best portrait of our time of what war against the Reds is factually like at the squad, platoon, battalion, regiment and division levels.

His book *The River and the Gauntlet* describes the Eighth Army's retreat in 1950 before the Chinese Communist assault. It reconstructs the major engagements of those who bore the brunt of the battle in terms of the true experiences of the individual soldiers involved. So this book answers with magnificent authenticity the question of many Americans: "What was it really like over there in Korea?"

It is an important question because it reflects the desire to bridge the gap between those on the side lines and those who have stood the test of battle. If only for the sake of knowing the worth of the enemy we are up against, it is good that this gap should be bridged.

The author has clearly aimed his book for those with special interests in the art of war and soldiering. Because of the number of abbreviations and technical terms, it would probably not sustain the interest of the

average layman all the way through. Even so, to any average citizen, be it advertising executive or wife and mother, I'd recommend reading into *The River and the Gauntlet* if they are in the slightest interested in a grasp of the phenomenon that affects so much of their lives—war in the mid-twentieth century.

Any combat correspondent worth his dispatches knows that the emotions of war—the fear, the inexplicable bursts of courage, the recklessness born of super tension, etc.—can be comprehended only by being on the scene. But combat correspondents know equally well that the best de-

scriptive stories are obtained by piecing together, after the battle, the ebb and flow as told by the soldiers involved. For during the actual course of battle—if it's a rough one—the correspondent, like the soldier, passes most of his time with his nose to the dust, dodging bullets. Being engaged in keeping his head down, his perspective is limited. The only way he can be sure of what the other fellow did is by asking him—when time and circumstance permit.

One is impressed by the amount of detailed questioning and hunting up of records that has obviously gone into this book. But the real satisfac-

—The Author—



S. L. A. Marshall served as chief Historian for the ETO during World War II and is presently a consultant for the Operations Research Office at Johns Hopkins University. He was Infantry Operations Analyst for the Eighth Army in Korea at the time of the Chinese attack described in this, his latest, book. He is Military Editor of *The Detroit News*.

—The Reviewer—



Marguerite Higgins, author of *War in Korea*, is foreign correspondent for the *New York Herald Tribune*. A Pulitzer Prize winner, she recently launched a new series of well timed articles on the cold war which are appearing in more than fifty newspapers throughout the world. Landing with the Marines at Inchon she covered all aspects of the fighting.

tion is that the detail is fashioned so as to give drive to the narrative. The author does not delve into the emotions of the men he describes except as represented by their actual comments. He doesn't need to. The hour by hour account of the fate of squads, platoons, battalions in peril of extinction builds its own terrible suspense. There is no spuriousness here. One watches the corporal and lieutenant, sergeant and colonel make their human judgments in awful realization that the sudden death or miraculous escape that follows is happening to one of our own.

Marshall poses some value judgments with which this correspondent disagrees. The entire question of the merits or demerits of starting the controversial Eighth Army offensive to the Yalu is inextricably tied into the question of the Free World's knowledge of Chinese Communist intentions. If the Chinese stayed out, the offensive was a sure thing. If they came in only halfheartedly, it still was a good risk. No one—and particularly not General Douglas MacArthur—would have ordered the offensive if it had been known that the Chinese armies were to come in full scale and that furthermore our capacity for retaliation by air and sea would be limited, thus giving the enemy double advantage.

(Washington did not prohibit Mac-

Arthur's right of retaliation until the Chinese Communist intervention was a *fait accompli*. MacArthur learned of Washington's attitude when his order to blow up the Yalu bridges was countermanded.)

Marshall seems to blame General MacArthur for not knowing the Communist intentions. But Communist intentions are decided in Peking and Moscow, and none of the leaders of the Free World including President Truman knew whether the Chinese armies in Manchuria were being readied as defensive warning or an assault group.

A graphic spectacle of the Free World's chronic inability to guess Communist intentions is being afforded currently by high level speculation as to what the so-called Malenkov peace offensive really means. It is a rueful tribute to the Russians that President Eisenhower tacitly admits in public speeches that he knows nothing more about what the Kremlin is up to than does any reader of Moscow's communiques.

And as great a man as is General MacArthur, it seems unfair in the case of the events of Fall 1950 to expect a field commander to know more than our highest governmental authorities in Washington, including incidentally, the Central Intelligence Agency, which was sure the Chinese would stay conveniently home.

But fortunately, in this reviewer's opinion, General Marshall's critique of top level military policy is only incidental. He documents beautifully his main purpose described as follows in the opening chapters: "The explanation of how the Eighth Army was deceived by its enemy is hardly separable from the story of its reaction to the unexpected situation. . . . All Americans had some share in the mistakes which precipitated the winter battle with the Chinese. On the other hand it fell to but a few of our countrymen to redeem with the sweat, courage and lives the situation thus made. The story lies in whether they did meanly or nobly."

General Marshall is admirably equipped to tell this story. He is a noted writer on military affairs. His impressive background includes the post of Chief Historian for the European Theater of Operations during World War II. At the time of the historic Chinese Communist intervention in Korea, the author was infantry operations analyst.

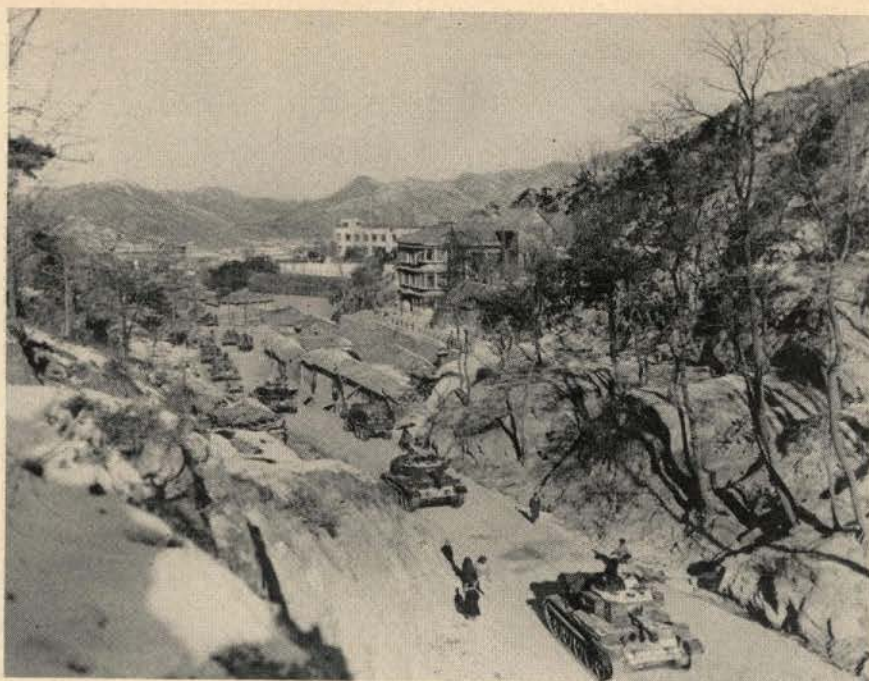
The blurb on the book jacket says "General Marshall has developed a unique method of battle reporting . . . his technique is based on exhaustive interviews of participants in battle from infantry squad to general."

In this reader's opinion the most compelling passage—and the one intended as the climax—was the description of the ordeal of the Second Infantry Division as it sought to escape through the Kunuri pass. The exit began without our top leadership realizing that the Chinese had infiltrated rearward. The result was that the convoys were not combat loaded and thus not prepared for the battle in the trap so carefully and devastatingly prepared by the enemy.

For stark honest reporting of both the "mean and noble," consider this passage describing the arrival of Major General Lawrence B. Keiser, division commander, at the pass: "General Keiser had been phenomenally lucky in his jeep run through the greater part of the gauntlet (the pass). After leaving his command post in the bivouac area at about 1:30 p.m. he doubled along the stalled part of the division column almost without stopping and got to the final ridge at about 3:15 p.m. This placed him in the pass approximately twenty



"It was but one incident among hundreds, each having its own special torment."



British Tanks moving into Seoul to take up new positions in late December 1950.

minutes after the column had wedged there. He personally witnessed the atrophy of our troops who had closed in just prior to his arrival.

"The dead lay in the ditches and sprawled across the roadway. Most of the living—even those still unwounded—were in such a state of shock that they responded to nothing, saw nothing, seemingly heard nothing. The Chinese fire beat like hail among the rocks and against the vehicles. But the soldiers neither cried out nor sought better cover. Their facial expressions remained set, appearing almost masklike because of the heavy coating of dust and the

distortion from the dropping of the jaws. They were saying nothing and doing nothing except that a few shuffled about aimlessly seeming to reel in their tracks. General Keiser walked among them moving from group to group barking questions trying to startle them back to consciousness. 'Who's in command here?' 'Who are you?' 'Can any of you do anything?' He got not a single response. . . .

"One thing made his heart leap up. A sergeant from the 9th Infantry had taken an 81mm mortar from a $\frac{3}{4}$ ton truck, set it up in the middle of the roadway and was now single-handedly firing the piece on line of

sight against the Chinese positions atop the south ridge. It was the only fire Keiser saw being delivered by an American. But he saw a few other self-possessed individuals most of whom were trying to help the wounded."

There you have it. The "mean and the noble." The truth.

One of the refreshing rings of honesty in this book as distinguished from the war novels is the lack of the grand gesture, consciously made and consciously noted. As anyone who has been near war can testify, there is no time for histrionics because the sheer urgency of the crises provides no audience. The very unreality of war is the casualness of death: when a young soldier rushes on the spur of the moment to rescue a wounded buddy and is instantly killed himself there is not even time to bow to this noble moment of heroism gone wrong. There are instead the more pressing problems of killing or evading the enemy before he gets you.

In reporting, in coherent human detail, the Eighth Army's retreat before the Yalu, General Marshall has discharged for history and for the present record some of this country's obligation to make known the courage and judgment of those who did nobly. By telling the truth about our failings General Marshall has given us the chance to profit from the mistakes of those who too often by force of overwhelming circumstance, lack of training rather than individual lack, fell into the category of those who did not measure up.

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I Joined The Russians

by

Count Heinrich von Einsiedel

The grandson of Bismarck, Count Heinrich von Einsiedel, shot down over Stalingrad after destroying 35 Russian planes, tells how he and other captured German Officers worked in Soviet prison camps to form the Free Germany Committee for splitting the German armies from both Hitler and the West. He recounts his own conversion to Communism and the clever and resourceful moves of the Russians and their German aides in the propaganda order of the committee, and how he accompanied the victorious Red Army across eastern Europe into Germany. He was imprisoned by the Americans for four months in 1947, and after his discharge, he renounced Communism and resigned from the party to become a neutralist.

\$4.00

The Kremlin vs. The People:

The Story of The Cold
War in Stalin's Russia

by

Robert Magidoff

"After nearly two-score years of the Communist regime, the Russian rulers are afraid of the people and the people fear the ruler." The author discusses such subjects as the revival of nationalism and religion during World War II, the Russification of minorities and anti-Semitism, and the condition of the peasants, the workers and the bureaucracy.

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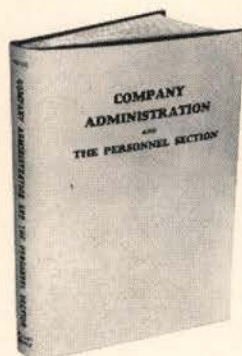
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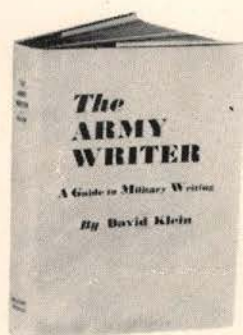
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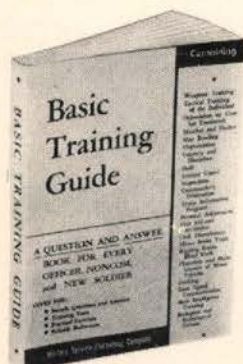
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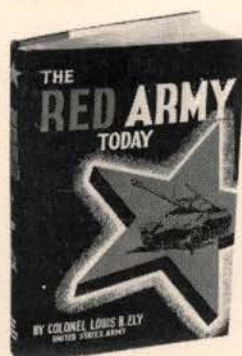
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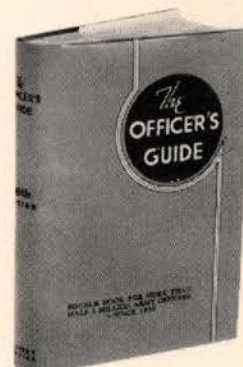
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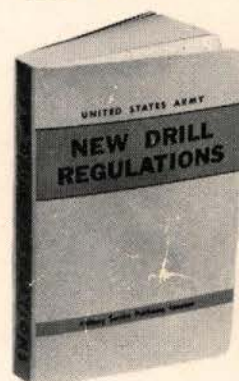
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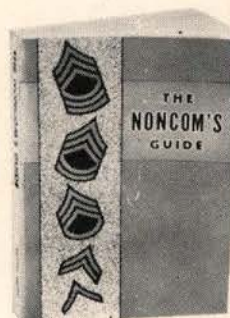
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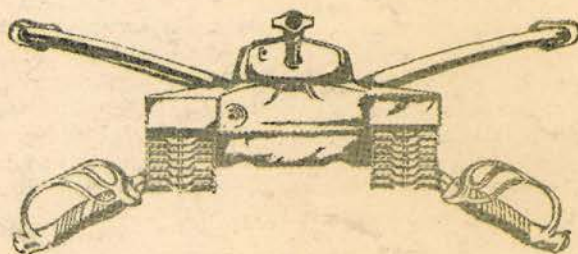
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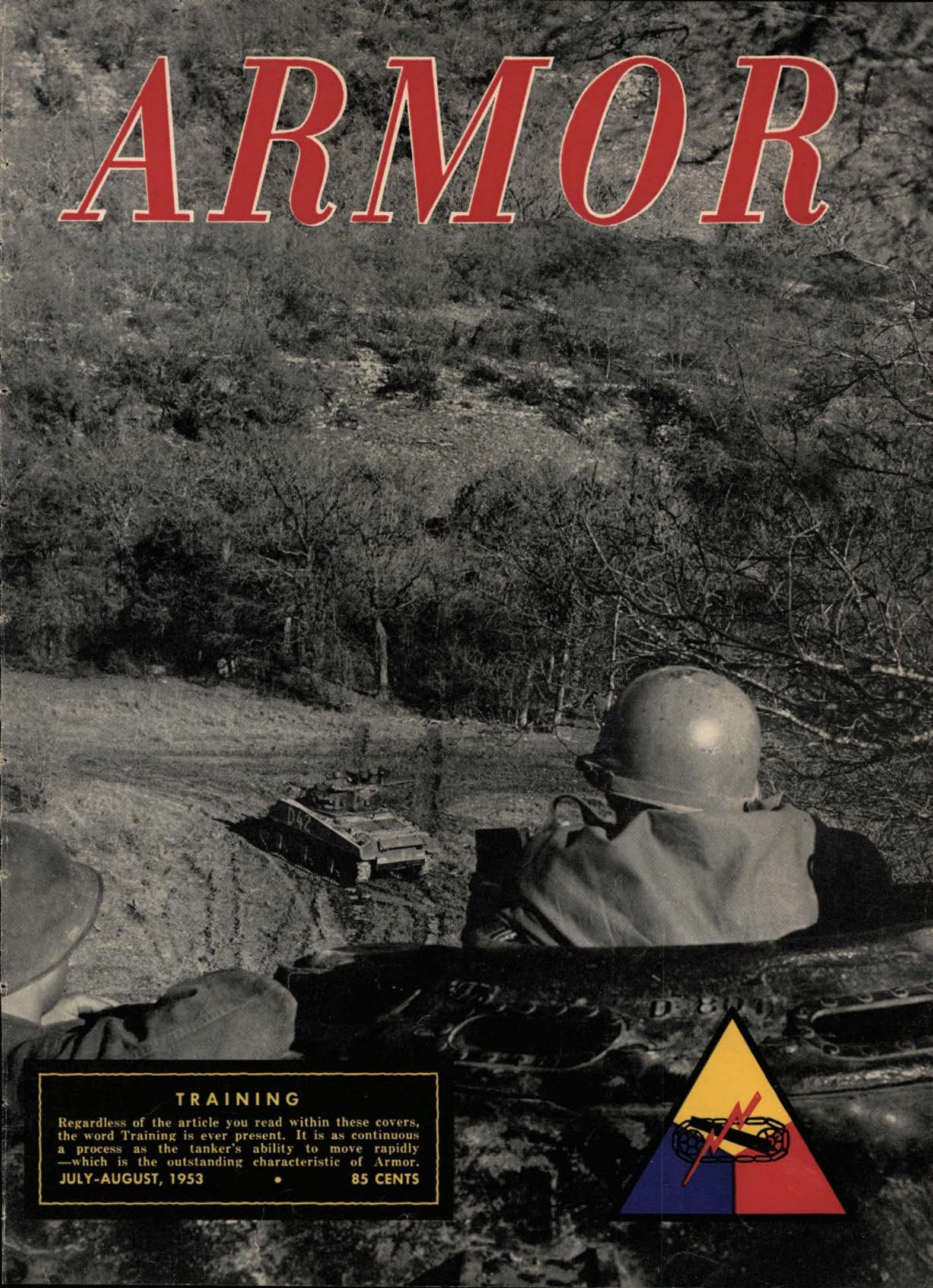
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JULY-AUGUST, 1953

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THE UNITED STATES ARMY IN WORLD WAR II

THE CHINA-BURMA-INDIA THEATER

Stilwell's Mission to China

by Charles F. Romanus and Riley Sunderland

This is the first of a three-volume subseries telling the history of the U. S. Army in the China-Burma-India Theater of Operations. This volume narrates the high-level planning and policy debates over China in the 1941-1943 period. Its central theme is the story of General Joseph W. Stilwell's efforts to carry out the orders of General George C. Marshall to improve the combat efficiency of the Chinese Army and to increase the effectiveness of U. S. aid to China. New light is thrown on the Stilwell story by the use of the general's personal papers, which were opened for the first time in May of 1950 and consulted by the authors.

The volume traces the origins of the prewar U. S. program of equipping thirty Chinese divisions, a 500-plane Chinese air force, and a line of communications to China from Rangoon. It describes the complicated Allied command situation that developed in China, Burma, and India, and details the First Burma Campaign. New Japanese material gives a glimpse of the other side of the story. Stilwell's futile efforts to command three Chinese armies in Burma, under the overall command of General Sir Harold R. L. G. Alexander, are narrated. After walking out of Burma to avoid being trapped by the Japanese, Stilwell presented major proposals to the Chinese, American and British Governments. The full text of these proposals, found in Stilwell's personal papers, is presented in this volume for the first time.



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Watch for the exclusive feature review

by Theodore H. White

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Volume LXII

JULY-AUGUST, 1953

No. 4

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BEDFORD FORREST

and His Critter Company

by

Andrew N. Lytle

Bedford Forrest, whose philosophy of "first with the most" is the keynote of mobile warfare, was one of the outstanding Confederate leaders in the Civil War. In four years of spectacular leadership he never knew defeat. Small wonder that Sherman once said "I am going to get Forrest if it takes ten thousand lives and breaks the treasury."

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LETTERS to the EDITOR

Under Consideration

Dear Sir:

Inclosed is a picture of the outstanding Armor Graduate at Alabama Polytechnic Institute receiving his award.

We at Alabama Polytechnic Institute think that the present awards presented by the US Armor Association to the outstanding Armor Graduate are a step in the right direction. I would like to see more thought given to re-



warding the second year basic and the first year advanced cadets who have done outstanding work in Armor. As you know, the second year cadet begins his branch material work and it is at this time that we really begin to know the cadet and to interest him in a Military Career in Armor.

LEWIS M. STEWART
Major, Armor

Auburn, Alabama

One Reason for Publishing ARMOR

Dear Sir:

As a Tank Sergeant recently returned from Korea, I want to say how interesting ARMOR has become to Non-Coms who like to read instructive articles about our branch. It is not so full of discussion of international policies on a high level that there is little room for lower level combat articles. Instead, ARMOR deals with problems in tactics, training, and maintenance

on a platoon level, which are problems in the everyday life of the Non-Com.

Herewith, a Non-Com's congratulation on ARMOR's journal.

HENRY P. BLANTON

New York, N. Y.

• *Thank you! But remember that the material is submitted by you, the reader. What goes in the magazine depends on you. See the RECONNOITERING column in this issue.*—Ed.

Local Chapters

Dear Sir:

In the September-October 1952 issue of ARMOR you published a letter where I proposed comment and discussion concerning local chapters of the United States Armor Association.

Since that time a lot of water has gone over the dam.

A local chapter was formed in the Washington area and two meetings were held which, I believe, were highly successful.

At the first meeting in April of this year, we were honored by having speakers present such as General Devers, Lt. General Crittenger, and Lt. Colonel George Peterson from the Research and Development Section of the Detroit Tank Arsenal.

At our second meeting we were fortunate to have as speakers: Major General R. W. Grow, wartime commander of the 6th Armored Division, and Colonel Harry W. Johnson, head of the Command and Staff Department of The Armored School.

Due to the fact that many Armor officers, or those interested in mobile warfare, assigned in the Washington area, have duties which do not permit them to keep fully abreast of their arm, these meetings have served to bridge the gap in assisting them in furthering professional knowledge in their particular specialty.

The next meeting is planned for September, and many officer changes

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Rates: See bottom of contents page.

will have taken place in the Washington area. If any officer being assigned in the Washington area would contact me by telephone at JACKSON 7-9400, extension 409, I will be glad to add him to our invitation list for future meetings.

I am likewise interested in inquiring as to the possibility of other chapters being formed. For example: Fort Knox, Fort Hood or Camp Irwin, or at any overseas station, particularly in the vicinity of the Second Armored Division, or in the locale of any of our Armored Cavalry Regiments, either abroad or in the States.

It is realized that a chapter is probably more beneficial to an area such as Washington, where Armor officers get together very seldom, due to their divergent Army assignments, but I am firmly convinced that these local chapters, formed on an informal basis similar to the one in Washington, are extremely worthwhile.

C. R. McFADDEN
Captain, Armor

Washington, D. C.

In Appreciation

Dear Sir:

As recipient of the "U S Armor Association Award" for New Mexico Military Institute I want to express my thanks for the fine books, the gratis one-year membership, the certificate, and the honor.

I will remember this occasion as one of the high spots in my life and I will endeavor to live up to this honor in the future years.

JAMES W. ELLIOTT

Amarillo, Texas

• This letter was received by General Crittenberger, our Association President. It was considered of sufficient importance to bring it to the attention of our readers.—Ed.

Armor vs. Mobility

Dear Sir:

I am interested in the field of Armor as a career. At present, I am a Sophomore at the Alhambra High School,

Alhambra, California. Can you tell me the vocational possibilities in armor and the preparation involved.

Inclosed is a sketch of an assault gun, featuring compound-oblique armor on both the front and the side. Used in a tank assault gun team I believe it would be effective. However in this design—it puts armor before mobility.

STANLEY REQUA

San Gabriel, California

• This sketch, coming from one of our young members, is most interesting. If anybody can assist in supplying information, we will be happy to forward it to him.—Ed.

Mistaken Identity

As OLD BILL adorned the cover during the 1920's we believe we have a case of mistaken identity. However, several old issues have been forwarded for Herr Franz's daughter.—Ed.

Dear Sir:

From May 3, 1916 till February 5, 1917 I was attached as a messenger to the volunteer Apache Indian Scout Detachment in Mexico, Lt. James A. Shannon was then commanding the 22 Apaches and the Interpreter. I was a member of Troop "G," 11th Cavalry, and reenlisted after the first world war in the 7th Cavalry at Fort Bliss, Texas. I returned to Germany in 1932.

Either in 1923 or 1924 one of your issues carried the scouts on the front page picture. I don't remember the issue of the journal. The number in question was burned up in my home in Berlin during the attack on that city on June 21, 1944.

I am wondering if it is possible to obtain a copy of that issue. I have a crippled girl 17 years old who was badly hurt during the air raid, and who is corresponding now with some Apache children living on the White River reservation and she would like very much to have one of these pictures of the scouts.

CARL A. FRANZ

Neckartailfingen,
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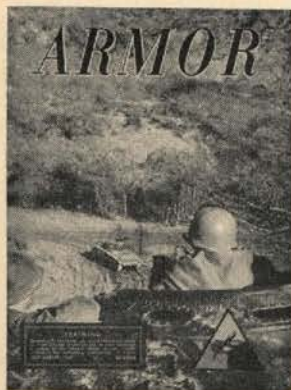
JEB STUART

by

Capt. J. W. Thomason, Jr.

J. E. B. Stuart is one of the most dramatic figures in American History. As a cavalry leader in the Confederate Army he performed exploits that for skill and daring have never been surpassed in the annals of mobile warfare. His famous "ride around" McClellan's army is important military reading for the contemporary in the field of mobile warfare.

\$5.00



THE COVER

This training shot photographed at Fort Hood is representative of multifarious scenes taking place around the globe wherever the U.S. Army is stationed—be it a "hot front" or a "cold front," a stateside station, or one to the North or to the South. Regardless of location the necessity for this training cannot be overemphasized. Its importance in preparing an individual to become a combat tanker should not be overlooked. Ask the man who is one.

While traveling by car to this office recently, a radio announcer made the statement, "And all the chicken does is lay the egg." He then proceeded to go into the various steps from the time of the laying of the egg until it was finally consumed at the breakfast table. It was picked up from the nest by a collector. The next man who handled it dry-cleaned it and put it in a room to cool. Then it was candled, graded and packed, and returned to a cold storage facility. A trucker came by and, for a slight fee, hauled this egg, with many other cases of similar eggs, to a wholesale distributor. Here, samples of the eggs were again graded and candled. Next, the egg was sold to a retail market. Here, the housewife purchased the egg and, several days later, served it to her husband, who actually consumed it for breakfast.

This tale can be likened to that of a person who writes a story, a letter, an essay, or any exposition he desires to sit down and put into words. For all the writer does is write the story—and submit it to an editor for publication. The editor then peruses it, making some edi-

torial marks and, if it is of a military nature, or is written by a member of the armed services, he submits it to the Department of Defense for security review. Here, this material is handled by the various interested staff sections, depending upon the context. After clearance, the editor once again goes over it with a fine tooth comb prior to submitting it to the printing plant where the linotype operator sets it into type. The proofreader and copyholder read it, making corrections of typographical errors, and return it to the linotype operator for resetting. The compositor then inserts the corrected type slugs on the galley of type. The clean proofs are returned to the editor where they are pasted up by a layout man with appropriate pictures; captions, titles, and author's biography are added. It is returned to the printing plant and the corrections and paging-up are made by the compositor, the linotype operator and the proofreader. It is returned to the editor for a second check and then put within the pages of the magazine in its proper sequence. The editor then travels to the printing plant for a final check prior to actual printing.

The article is now printed on large sheets of paper. After the pressman completes his operations, the bindery workers fold the various signatures (printer's term for sections) of the magazine, and the signatures, plus the cover, are collated, trimmed, inserted into envelopes, and sent to the readers throughout the world for their consumption.

Yes, all the chicken did was lay the egg, and all the writer did was write the story. But without either of these originating acts being accomplished we would not have the egg nor would we have the story.

ARMOR is proud of the fact that its material in the past has been of such high caliber, and it is a tribute to all the writers who started with the original idea. For each and every author had a story to tell and, what is more important, he took the time to sit down and write it so that every other Armor officer or person interested in mobile warfare could benefit by his (the author's) experience.

As we have often stated in the past,

the purpose of this magazine is to "Disseminate knowledge of the military art and science, with special attention to mobility in ground warfare; to promote the professional improvement of its members; and to preserve and foster the spirit, the tradition and the solidarity of Armor in the Army of the United States."

In keeping with this policy, the Editor, of necessity, must reject some manuscripts he receives because they are untimely, or are controversial in the family circle of the military, or because of possible security violations. A few, having no bearing whatsoever in a military publication, are, of course, rejected completely and without reservation.

The more professional people who take the time to originate a story and submit it for potential publication, the better selection we will have, and the better in quality will be *your* magazine.

Keep them rolling in!

The Editor

—THE COMING WAR—



—A CONCEPT—

by COLONEL ROTHWELL H. BROWN

NOBODY in the free nations of the world wants war; least of all the professional soldier who has witnessed at first hand the terrible destruction of war in terms of human lives and property.

However, the professional military man is well aware of the fact that the problems posed by politics and diplomacy and economic factors are frequently beyond the capacity of individual diplomats to solve. The pages of history are bloody with the great succession of wars that have rolled ceaselessly on through the years since the first cave man bashed in the head of a stranger trespassing near

his cave entrance. Most professional military men, as much as they abhor war, are inclined to agree with the Bible, "and there shall be wars and rumors of wars and the end is not yet."

There are two conditions which exist in the Soviet Union which make war an imminent danger. One lies in the very nature of the form of government which has been established there. In the first place, the form of government is a complete dictatorship, normally controlled and guided entirely by one person, and always has been controlled and guided by a very small group of absolute dictators in those periods of transition when the one strong man has not been able to seize absolute control. The other facet of the picture

lies in the very nature and teachings of Communism itself.

Dictatorship and war, and Communism and war are almost synonymous—or else the pages of history lie.

The presence of either one of these conditions in a country as great in land mass, population and resources as is Russia today could lead eventually to war. Today in Russia both of these conditions are present.

Although every effort must be made to explore all possibilities for peace, the country as a whole, and above all its professional military men, must be constantly alert for war and prepared for an outbreak on a grand scale at any time.

Historical Lessons in Mobility

The horse placed at the disposal

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THE ANSWER



ARMOR

of the great strategists of the past an agency for increasing mobility and therefore an agency for waging war over relatively great distances through its capacity for carrying supplies, ammunition and increased caliber of weapons. Gunpowder and its train of weapons eliminated the horse and the gas engine took over through its greater superiority, more lasting endurance, greater flexibility, and increased mobility. The internal combustion engine has increased the scope of war from the mobility of the horse, which was about twenty to fifty miles a day for sustained operations, to a mobility in terms of thousands of miles a day when we consider the airplane and hundreds of miles a day when we consider the tank and other automotive equipment.

If the United States and the other free nations of the world are to continue to exist in freedom, it is essential that they, and their military leaders in particular, have a complete

and profound understanding of the full scope that has been made available in the conduct of war through the use of this otherwise peaceful and productive product of man's genius.

World War I and the machine gun indicated beyond any shadow of possible doubt that the horse could no longer provide mobility on the battlefield. There was no great weapon of decision available in the hands of any commander. In order to break the terrible stalemate which existed, two methods were adopted. Initially, both the Germans and the allies attempted to overcome the loss of mobility and the loss of the capability of strategic maneuver by assembling huge quantities of artillery and literally blasting a path through the enemy's defenses. Without a mobile weapon capable of exploitation, even tremendous quantities of artillery could not develop strategic maneuver. The defender was always able to wall off the breach which, due to the nature of artillery, was definite-

ly limited in depth and flexibility.

Faced with a terrible war of attrition, which was slowly bleeding them white, the British finally developed the tank or "armored internal combustion engine." Although this weapon was used too soon, in limited numbers and never up to the full capability inherent in even the very earliest models of tanks, its impact on the Germans' defensive system, through its ability to penetrate further and faster than the breach could be sealed off, eventually led to overcoming the stalemate and to the final destruction of the morale and will of the German Army and the German people to fight.

During the years between World War I and World War II, those military thinkers in all countries who analyzed what had happened in World War I came to the conclusion that the tank once more had restored mobility to the battlefield and had placed in the hands of the tactical commander an offensive weapon with which he could achieve a

decisive and overwhelming victory.

Yet the teachings of these people, their writings and their thoughts were given too little heed in the staffs of military planners throughout the world.

Fuller and Liddell Hart in England wrote very clearly of the true nature of mobility in war and of the decisive characteristics of the armored vehicle in generating mobility. Guderian, in Germany, who read Fuller and Hart, arrived at the same conclusions. In this country, General Adna Chaffee and General Van Voorhis were men of the very greatest vision who saw the necessity of utilizing to the fullest the truly great and outstanding characteristic of armor, its mobility, and its demoralizing effect when used in mass.

The campaigns of World War II are still fresh in everyone's mind and it is perfectly clear that armor, as such, was never used to its full effectiveness throughout the entire war. Guderian's whole concept of war was whittled away by the German general staff, by changing tank models and by production of self-propelled artillery at the personal direction of Hitler. So the great armored army which Guderian saw as the vital weapon of war was never constituted. What Hitler thought was enough "panzers" proved to be far too few for total war. In this country, the death of General Chaffee brought about a more conventional concept in the development of armor and led to its piecemeal utilization throughout the entire war.

Good and capable commanders took over, but since there was no inspired leadership either in Washington or at Fort Knox, armor subsided to a subordinate role. Those who had been inspired by the great vision of General Chaffee, those who had gone up on the heights and had seen what might have been, remained helpless and inarticulate. Today the same lack of understanding and vision paralyzes the development and use of armor—its few outstanding proponents have died, or have almost given up the fight—but the spark, the flame still exists. Given support and direction from above—armor, the integrated fighting team, the weapon of mobility, the weapon of decision, would come to life and become one of the truly great defenders of our

country and our way of life. Tanks we have, but armor we do not have. Without armor defeat may lie just around the corner.

The Threat

If an all-out war should come, once again the world will be stunned and hold its breath in panic just as it did when the German mechanized armies first swept through Poland and then a year later swept through France, *in each case completely paralyzing each country in a very few weeks*. There will be one great difference, however, for the Soviets could sweep across Europe with thousands of armored vehicles compared to only hundreds available to Hitler's generals.

There is only one weapon which can possibly hope to cope with the mobility and momentum which could be generated in a mass Soviet armored attack which could be launched at any moment across Europe. This weapon is a superior armored force. Superiority in quantity may not be necessary but we must have superiority in quality and very near equality in quantity. Otherwise, Soviet armor will cast aside everything that opposes it, as a spring freshet, roaring down from the mountains, casts chips, logs and trees upon its banks in its pell-mell rush to the sea.

Unfortunately today we have neither the armored forces in being which will be required to face the might of the U.S.S.R., nor anyone in high position who appears to see the decisive effect that the mobility and momentum of these large masses of Soviet armored forces will have on the course of a possible future war.

In the defensive phase of thinking and planning that has absorbed our attention since World War II, I do not believe that our planners have lost sight of the decisive possibilities of warfare of movement. However, I am positive that they have lost sight of the fact that armor today is the only available weapon which can restore decisive maneuver to the battlefield. Too many of our planners appear to have come to the conclusion that decisive mobility can be restored to the battlefield, first through increasing the mechanization and motorization of the standard infantry division by the inclusion of tanks and

additional track and wheeled carriers, and, secondly, by the development of specialized airborne divisions.

From very close observation of the operations of our infantry divisions in Germany and from study and evaluation of the operations of our infantry divisions in Korea, it is clear to me, that the inclusion of three tank companies and one tank battalion in an infantry division has not increased its capacity for decisive maneuver on the battlefield but has only provided the infantry division with an anti-tank weapon.

The infantry division now possesses so many motor vehicles that its actual mobility has been markedly decreased through its complete dependence upon an adequate road net. It cannot operate effectively cross-country. Furthermore, the infantry division has never, to date, been provided with the type of communications which is essential if the division is to be capable of great flexibility and maneuverability.

Our present day infantry division has, to a large extent, lost the inherent mobility of its foot soldiers to traverse all types of terrain, through their dependence upon the transportation of the foot soldier elements of the division in motor transportation. Glaring examples of this have been apparent in every postwar maneuver held in Germany and have been clearly demonstrated time after time in Korea. Only in the Korean operations of Van Fleet do we find the infantry back on their feet.

Our planners, clearly recognizing the necessity for attaining decisive battlefield maneuverability, and of being able to conduct a war of movement, have become bemused and confused with the capabilities of airborne troops to effect the so-called "vertical envelopment" and thus restore decisive mobility to the battlefield.

Furthermore, the theory that air power alone through strategic and tactical bombing can bring an enemy to defeat has certainly been badly battered if not disproved in Korea. In spite of every effort by our Air Force, Communist forces in Korea have built up constantly their personnel strength and have been able to increase their stockpiles of all munitions of war. If this has been possible, in a small, narrow, constricted peninsula, the capability of

air power to inflict mortal damage across the whole land mass controlled by the U.S.S.R. seems highly improbable.

A considerable number of our planners and officers in very high positions who believe in the ultimate success of airborne operations consider that present airborne troops are capable of making deep penetrations, up to almost 1,000 miles, into enemy held territory.

There is, in actuality, no basis in fact upon which such a belief can be held. In the face of Soviet aerial strength it would be practically impossible to deliver airborne troops for any considerable distance into enemy controlled territory. The attrition rate in both material and personnel, if such an operation was tried, would be so ghastly as to preclude any further attempts until such time in the war as we have finally achieved complete air superiority. Such air superiority will not have been achieved until we have destroyed enemy productive capacity and therefore will have won the war.

But, granting for the sake of argument that airborne forces can be air delivered deep into enemy held territory, such forces cannot hope to achieve any major success on the ground in the face of the tremendous number of armored units, from divisions through armies, which are available to the enemy.

Under present and foreseeable weapons systems, no weapons capable of defeating the tremendous number of Soviet tanks which could and would be thrown against any airborne drop, are presently available to go in with airborne troops. The development of completely suitable antitank defensive weapons which can be air-dropped so as to be available at the most critical period in any airborne operation appears to be highly improbable.

The use of airborne troops in what might be termed limited objective drops offers some reasonable hopes for success, provided they can be reinforced immediately with strong armored units. Any analysis of airborne drops in the past, and even limited study of the capabilities of airborne troops in the future, will indicate that the link-up must be executed rapidly and violently. This definitely precludes the use of standard infantry

divisions and necessitates the use of strong armored forces.

So far our planners talk in terms of air drops which will be reinforced later by troops advancing over the ground. This theory seems to have the cart before the horse. It appears far more realistic and practical to reinforce armored units which have already seized a critical objective.

Airborne troops are in fact light infantry troops. Except when used and reinforced as conventional infantry their staying power is extremely limited. But their great mobility makes them an ideal force to be integrated with the really mobile ground force—armor.

Effectiveness of Antitank Weapons

For every military weapon which has been developed, there has always been developed a defensive or counter weapon. It has been obvious for years that every country, and every army, has been expending every effort to develop a weapon with which to combat the tank. Such development has varied from the buried mine through the various types of individually fired bazookas, through self-propelled antitank guns and on up to an extremely heavy tank itself. All of these weapons have certain capabilities in destroying individual tanks. All of these weapons have certain capabilities, when properly employed, to slow down an armored attack, but no weapon as yet foreseeable for development, is capable of eliminating armor—the integrated fighting team—as the decisive arm on the modern battlefield.

In this country, in our search for a cheap antitank weapon, we went through an entire development cycle in a tank destroyer program which started out with light armored vehicles carrying heavy cannon. Upon the conclusion of this development program, we had gone a full cycle and had found that the tank itself was the best antitank weapon. Today, in the search for an antitank weapon which can provide complete security for infantry elements, we have embarked once again on the light vehicle, big gun development program. Analysis indicates that this program will also end in the conclusion that the tank itself is still the best antitank weapon.

In the face of increased antitank

developments, the task of the armored unit becomes more difficult. It will require greater skill and knowledge for proper employment in view of the use of atomic weapons, and undoubtedly far greater coordination will be required between armor, airborne infantry, artillery, air, and engineers than was necessary in the past. Armor, in mass, skillfully used in conjunction with airborne infantry, artillery, air, engineers, and atomic weapons, can and will continue to dominate the modern battlefield.

It is a matter of the very gravest concern that the Soviets appear to understand this principle and have developed their entire concept of modern warfare around the mass armored army.

The value of armor as a major arm appears to have been submerged in the concept of using it largely as a supporting arm. The present infantry division now contains approximately half as many tanks as an armored division without possessing the armored division's flexibility of movement, communications and supply. The mobility of the tank in the infantry division is now no greater than that of the individual foot soldier. Likewise the shock action and range are limited to that of the foot soldier. The mobility of the tank in the armored division, the shock action of the mass armored attack, the ability of armor to maintain momentum and to drive deep and keep on going, has likewise been sacrificed and subordinated to the infantry concept.

The dissipation of our armored strength, or perhaps it might be more clearly stated, the dissipation of our tank productive capacity, by parceling it out in small units to each and every infantry division has made it impossible for us to support at the same time the major armored forces which are a real basic requirement for the defense of our country, and which should be "in being" upon the outbreak of an actual war. The catastrophe which overcame France less than fifteen years ago is still a vivid memory; yet some of our planners seem to have forgotten that France was defeated even though she possessed far more tanks of a superior design than were available to Hitler. It seems incredible in the face of such an historical example that we should adopt the same policy.



Tanks in the Infantry division provided it with an antitank weapon rather than increased its capacity for maneuver.

Application of Armored Doctrine to Tank Design

Our present day division of tanks into three classes, based on weight to a large extent, rather than function, has, in my opinion, had more influence upon the development of tanks than has any concept of utilizing tanks for the support of infantry or for their major role in armored forces.

Our present doctrine states quite clearly that we need three types of tanks, a light tank for reconnaissance, a medium tank as the main tank of the armored division and the infantry division, and a heavy tank to support medium tanks in both the armored and infantry divisions and at the same time be available as a major antitank weapon.

Since all development work has been limited to tanks within these three characteristics of weight, there has arisen a considerable difference of opinion among those who want tanks to support infantry and among those who want tanks for use in mass armored forces, as to the armor protection and gun caliber which should

be carried within each of these three classes of tanks.

As a natural consequence of a desire of all armor people to carry a larger gun and more armor protection, we have now arrived at a point at which our light tank, to all intents and purposes, equals our medium tank of the last war in every characteristic except the one for which it was supposed to be designed, and that is agility and mobility.

Again the medium tank has increased in size and gun power over those we used in World War II, largely because the German 88mm gun was able to effectively penetrate and outshoot our *under gunned* medium tanks. In an effort to produce a better tank gun than the 88mm gun and in an effort to protect our tanks against the 88mm gun, we have developed a medium tank which is to all intents and purposes a heavy tank. In the development of our medium tank, we have not been realistic in assessing the final weight at which our tank would arrive upon completion of the development program.

It is now quite obvious to many of us that in developing our present

medium tank we have come up with a tank which is not suitable for its use as the medium tank in the armored division, armored corps, or armored army. On the other hand, I do not believe that our present medium tank meets the requirements for a medium tank in the infantry division. We have developed a compromise medium tank which is not satisfactory for either role. Such a compromise may be necessary (from a production standpoint only) and it may be that we will have to re-evaluate the role of the medium tank in the armored division, particularly in exploitation, based upon the actual characteristics and capabilities of the vehicle which we have had developed. I do not believe that we can blame Ordnance for this in any way. I am convinced, that, with exceptions in accessories, Ordnance has tried its best to build what we have asked for, as set out in our military characteristics.

We have also included within our so-called family of tanks a heavy tank. As our medium tank is a product of our respect for the German 88mm gun, our heavy tank is a

product of our respect for the Joseph Stalin series of Russian tanks.

Our thoughts on the heavy tank have really not crystallized. Our doctrine states that we require a heavy tank capable of defeating any possible development in enemy tanks, but so far we have been entering the cold waters of this development race gingerly. In our design characteristics for the heavy tank we have proposed to build a tank which is impervious to enemy heavy tank fire and which carries a gun capable of defeating any possible enemy tank. Based on these two characteristics, we have very rightly conceded that agility is of lesser importance.

In analyzing the development of our present series of tanks, it is my conclusion that our tank development program has been far more influenced by our original concept of the family of three tanks, and by our respect for the 88mm gun and the Joseph Stalin tanks than it has been by wise analysis of the functional requirements for a tank.

The time is now overdue when we should make a complete restudy of our tank military characteristics

and determine if our present concepts are sound and if we should rewrite our military characteristics based upon functional requirements.

If we really need a light tank for reconnaissance and security missions, there should be a complete and thorough understanding of just what "light" means in this case. What is the real, honest, basic foundation on which to develop the light tank? Have we achieved the proper relationship between the gun, armor protection and agility in our present light tank?

In terms of man-hours of labor, strategic materials and cost, there is so little saving between the present light tank and the present medium tank that its inclusion in our armament is certainly worthy of intense study.

I personally believe that a requirement exists for a light tank but I do not believe that any conceivable requirement exists for the light tank which has been recently designed and produced. We need a light tank with a big gun but with less armor, less weight, far greater agility and mobility, and a far greater radius of

operating action. Such a tank would provide reconnaissance and security elements with an armored vehicle capable of limited fighting for information and survival and would represent a very marked and important savings over accomplishing this same mission with a medium tank.

The armor might of the armored division, armored corps and armored army must remain with its medium tanks. I believe that we should examine hardheadedly our medium tank program and determine if the present medium tank actually meets the requirements for our armored forces. I feel quite certain that complete analysis of this problem will indicate that presently we do not have a tank which is suitable.

The present types of medium tanks, which were built as a defense against the 88mm gun, and possibly against the Soviet 100mm gun, have become too heavy, too complicated, too expensive and too limited in mobility to properly perform the vital mission of restoring mobility to warfare, nor are they capable of driving deep into the enemy's vitals and of being able to continue to exploit those deep pene-



Static conditions in Korea as shown have done much to affect our thinking regarding Armor's characteristic—Mobility.

trations which are the vital, outstanding capability of a real armored force.

Somewhere along the line, through analysis and study, we must determine the proper relationship between a few heavy, highly armor protected medium tanks and a very considerable number of less heavily armored medium tanks. In other words, we must re-examine our position and determine if we have arrived at a sound and proper balance between quantity and quality in limited quantity.

The present operating range of our series of medium tanks is a source of very deep concern. Even with jettison type gas tanks, I doubt very much if our present medium tanks, under combat conditions, will have an operating radius of 90 miles. This is too limited. In addition, it will impose an almost insuperable resupply problem on all agencies supporting armored units. I am of the opinion that in order to restore basic mobility to the medium tank we must re-examine our position with respect to its weight.

I am opposed to reducing the caliber of the gun carried on the medium gun tank; I am opposed to reducing the velocity of our armor piercing types of ammunition; I am opposed to reducing the number of rounds of cannon ammunition which can be carried; I am opposed to reducing our range for accurate tank fire below 2,000 yards; I am opposed to reducing the crew below the four now provided in the M48 tank. Furthermore, I am opposed to any attempts to reduce the weight of the tank by minor changes in the silhouette. I am opposed to reducing the size of the turret below that now provided on the M48 tank. I am opposed to eliminating the 360° traverse of the turret for the light and medium tanks.

I am of the opinion that we can expect only minor reductions in fuel consumption in any tanks approximating the weight of our M47 and M48 tanks. More simple, rugged and less expensive power packages can and must be developed, but even optimum development in this line cannot overcome the ratio between weight and fuel consumption. I am convinced that we must restore our long range mobility to the medium tank for the armored division, and that this can only be done by a calculated reduction in the amount of

armor protection required, coupled with complete new designs, based on functional requirements.

We need to make a thorough analysis of our armor requirements based upon the capabilities of our tank cannon, our sighting systems, our ability to secure a reasonable percentage of "first round hits," the use of the range finder, our ability to fire accurately at far longer ranges than was possible in the last war, and the destructive quality of our armor defeating ammunition.

We should study the capabilities of Soviet antitank and tank cannon, and determine the point at which only minor additional protection is being secured but where a marked increase in weight is occurring. Nothing is gained by having more armor than is required to protect against the 76mm gun, if at the same time we do not secure protection against an actual Russian gun such as the 88mm or 100mm. If we can fire effectively at ranges from 1,000 to 2,000 yards, do we need to carry armor that will give us protection against hits by Russian cannon at ranges of 300 yards or less?

Somewhere there is a balance between weight or armor protection, and mobility or fuel consumption and logistical supply, which will be the very best balance that can be achieved. I do not believe that we have achieved this point of balance in any of our present types of tanks; we must develop a great mass of data before we can achieve it with certainty.

In view of the above discussion it is quite clear, to me at least, that our present medium tanks do not meet our definite requirements for the medium tank in the armored division, and that they also fail to meet the functional requirements for such a type tank in the infantry division. The more I study the problem, the more I am forced to the conclusion that no *single* tank of the medium class which has been or can be developed will fulfill the functional requirements for a medium tank in these two types of organizations.

It is my considered opinion that at the same time we re-evaluate the design characteristics of a medium tank for the armored division, we should determine once and for all, first is there an actual overriding,

overpowering requirement for the inclusion of tanks within the infantry division? I believe that the answer to this will be *yes* and that we must, therefore, secondly determine the military characteristics of the most effective tank possible for inclusion in the infantry division.

In spite of every development in antitank weapons, no single weapon developed solely for its antitank capability is capable of providing effective defense for the infantry. It is quite obvious that the infantry must be provided with an effective antitank weapon, and since the tank has been proven to be the best possible antitank weapon, tanks must be included within the infantry division. The number of tanks to be included should be only those absolutely required in this antitank role. Since this is the case, such a tank can differ materially in its characteristics from the medium tank in the armored division.

The infantry tank, since it will be used in every infantry division, regardless of the type of terrain which that infantry division will be occupying, should have far greater cross-country mobility than the medium tank in the armored division. It should carry the largest caliber gun which can be economically carried on it for the destruction of enemy armor, it should carry a balanced envelope of armor to afford it the maximum protection possible against enemy tanks without seriously limiting its cross-country mobility. Such a tank need not have high road speed, nor need it have a capacity for sustained operation in excess of fifty or sixty miles. Every design characteristic of this tank should be carefully considered for inclusion only if it contributes materially to improve the mobility and gun capability of the tank to support the infantry both defensively and offensively in normal infantry operations.

With respect to the heavy tank, I believe that we should continue to design and produce limited numbers of various types of heavy tanks so that if and when the day arrives when the positive requirement for this type of tank is established, we will have a capability of producing a reasonably suitable heavy tank which has been tested, both for mechanical reliability and for its weapon capabil-

ity. I believe that the production of any great number of heavy tanks at the present time is most undesirable. Any attempt to standardize a heavy tank in the light of present day knowledge will prevent the complete exploration of this entire program.

The heavy tank presents so many engineering problems from the viewpoint of its power package, its suspension system, its gun control system and its overall reliability, that every conceivable design concept should be thoroughly and exhaustively investigated.

Tactical Employment of Armor

Our present tactical doctrine on the employment of the armored division is limited to supporting the World War II type corps. Our present doctrine fails to take advantage of the really great characteristic of armor in mass, the armored corps and the armored army, which is its ability to provide the commander with a weapon of decision through its capability of operating deep into the enemy's defensive area. The limited objective attack in which armor supports the much slower advance of the entire infantry line fails to take advantage of the great mobility of armor and reduces it to a purely supporting, rather than a decisive, role.

Every attempt to increase the mobility of the infantry division has resulted in a weak and ineffective duplication of the tank elements only of the armored division. The infantry elements, the artillery elements, and particularly the communications elements of the infantry division, have never been raised to the mobility level of corresponding elements within the armored division.

Mobility in the armored division does not stem solely from its tanks but stems from the fact that every single element in the armored division has mobility equal to, if not greater than, that of the tanks. Also, the mobility of the armored division is more than just the mobility of its elements; it is psychological, it is ability to think fast, to communicate, to operate quickly, to disperse rapidly, to converge quickly, to move great distances with a minimum of administrative orders, and above all it is ability to maintain momentum. These concepts do not exist to any considerable degree in the present infantry

division which is tied to a wire communications net and which thinks in terms of thousands of yards a day, whereas armor thinks of hundreds of miles per day.

Practically every difficulty under which armor operates today stems from the lack of appreciation of the full capabilities of armor. I doubt that the possibility and feasibility of waging an entire war based on a moving pattern of successive objectives in which armor drives deeper and deeper into the enemy's vitals has ever been realized or if it has been studied at all by our planners. The Germans had the germ of the idea in their campaigns against the Soviet Union. The Soviets appear to have expanded on the German concept. But it is my opinion that no country, and no army, has fully and completely explored the vast realm of tactics and strategy which lies just across the threshold of today's appreciation of the capabilities of armor in combat of the future.

We have developed three really mobile forces: armor, the mobile ground force, airborne, the mobile infantry force, and both strategic and tactical air. Somehow or other these three great mobile forces must be welded into an integrated fighting team.

Mass armored forces can move relentlessly over the ground to seize a vital objective. Once the objective has been reached they can be reinforced immediately by our airborne forces, who can consolidate the position and establish the temporary logistic base which can then be supplied through air transportation, protected by tactical air.

When the armored force moves on to the next objective the entire temporary base can be evacuated by air, and the great land lines of communications which defeated Napoleon and Hitler will cease to exist.

All the tools for victory are at hand, and it only needs the spark of genius of a great commander to develop the coordinated use of all of our great weapons. The destructiveness of our atomic weapons, the great mobility and flexibility of our Air Force and airborne forces and the ground mobility of our armored forces could be welded into a mobile fighting machine superior to anything ever conceived of in the past. With armor

sweeping ahead, assisted by the destruction by our atomic weapons, with air power supplying protective cover overhead, and close and distant ground support, and delivering supplies and personnel to the great air bases which can be established through the advance of armor, mobility and flexibility in war could be established on a scale almost beyond comprehension.

American Industry

We are still the greatest productive unit in the world. Although there is much discussion as to the limitations of our productive ability, which make it impossible to support some of our proposed armored plans, I doubt that anyone has any real knowledge of the productive capacity of this country if it becomes necessary to completely utilize our great resources in all-out total struggle for survival. Too many of our planners are thinking in the terms of fighting a war while at the same time life will go on as usual for those not actually in the armed services. The destructive capability of the Soviet Union in a possible war of the future would be so great as to preclude any hope that we can fight them with one hand and eat our normal ration of butter and bonbons with the other.

Furthermore, there must be a hard-headed analysis made of our major military requirements. We never can expect to have unlimited quantities of any and every type of military weapon which might be conceived of as serving some useful even though limited purpose in war. If we are willing to concentrate on the design, development and production of those weapons which will really contribute effectively to winning a war, there is no reason to believe our great productive capacity cannot meet our military requirements.

We are a country with the approximate population of one hundred and fifty-eight million people. We are allied with other countries to the extent that the overall population factor is probably somewhere around four hundred to four hundred fifty millions. This is the total population from which we can expect to draw our fighting strength. We are facing an enemy with a capability of drawing upon a population base almost twice the size of ours, and most of

these people are as entirely suitable for military service as are those upon whom we will have to depend.

Yet, in the face of this tremendous disparity in population or manpower resources, we are continuing to build and develop an army based upon the foot soldier. In other words, and in spite of statements to the contrary, we are still trying to develop our military strength based on a body for body basis. With our great manufacturing capacity and our great resources we could not hope to defeat the enemy without using these to the utmost. Since it is obvious that we could never defeat the Soviet Union and China on a body for body basis, it is absolutely essential that we develop a type of army which will permit us to use our industrial products. The weapon of war which offers the greatest return in the use of our productive capacity is armor. With armored forces completely coordinated with our airborne forces, armored artillery, guided missiles, air power, armored engineers, and our atomic weapons, there is some reasonable degree of hope that we can defeat any enemy, but if we continue to base our military structure upon the foot soldier we could very possibly suffer

defeat in a future war and sink into complete abject slavery.

Too much of our effort today is being placed on eliminating mechanical deficiencies which exist in production models of tanks, and far too little effort is being made to increase the overall effectiveness of our armored forces through a thorough analysis of functional requirements.

The lull of tank design and development which followed World War II was succeeded by a panic design and production program upon the outbreak of the Korean War. This had led us into very serious difficulties. If we have learned from this that tank design and development and research must be a continuing project and not a project of "feast and famine," we will have gone far in solving our difficulty. If the necessity of maintaining adequate research and development programs in armor can be clearly delineated to the Congress so that money will be appropriated on a continuing basis, we will at once place our development program on a sound basis.

Armor vs Atomic Warfare

Of all the capabilities of armor which are overlooked today by our

planners, the ability of armor to operate against an enemy equipped with atomic weapons, or in exploiting the use of our own atomic weapons, is the most neglected and least understood.

Enough has been developed from the pattern of atomic research to make it quite clear that armor is the only arm which can exist, with any reasonable degree of safety, on the atomic battlefield, particularly in the face of enemy employment of tactical atomic weapons. The ability of armor to disperse, without loss of control and military effectiveness, is so much greater than that of standard infantry units as to need no elaboration. Likewise, the ability of armor to converge rapidly, efficiently and completely ready to fight is an outstanding characteristic. The protection against heat and radiation which is afforded by the armor of the tank, the personnel carrier and armored artillery has been clearly disclosed.

These three major characteristics will permit armor to operate immediately within an area subjected to hostile atomic attack. This will prevent the exploitation by the enemy of the destruction which has probably been rendered to standard infantry units within such an area. Even though infantry has been relatively protected in its foxholes, the atomic attack will probably have completely destroyed all infantry communications and all transportation normally organic to the infantry division within a large radius of operations. Under such conditions the coordinated defense of such an area by infantry appears highly improbable.

Offensively armor can proceed immediately into an area which we ourselves have subjected to atomic attack and can exploit to the utmost the effects of the atomic weapon. No other element in our armed forces has this capability, yet very rarely do our planners, or those in high position, make any mention of this outstanding capability.

It appears, to a large extent, that we consider the atomic weapon only in its application to conventional operations in which the infantry division and corps will take part. It is essential that an exhaustive and comprehensive study of the relationship between the decisiveness of the atomic weapon and the decisiveness of



The weight of our medium tank has been affected by our WW II experiences.

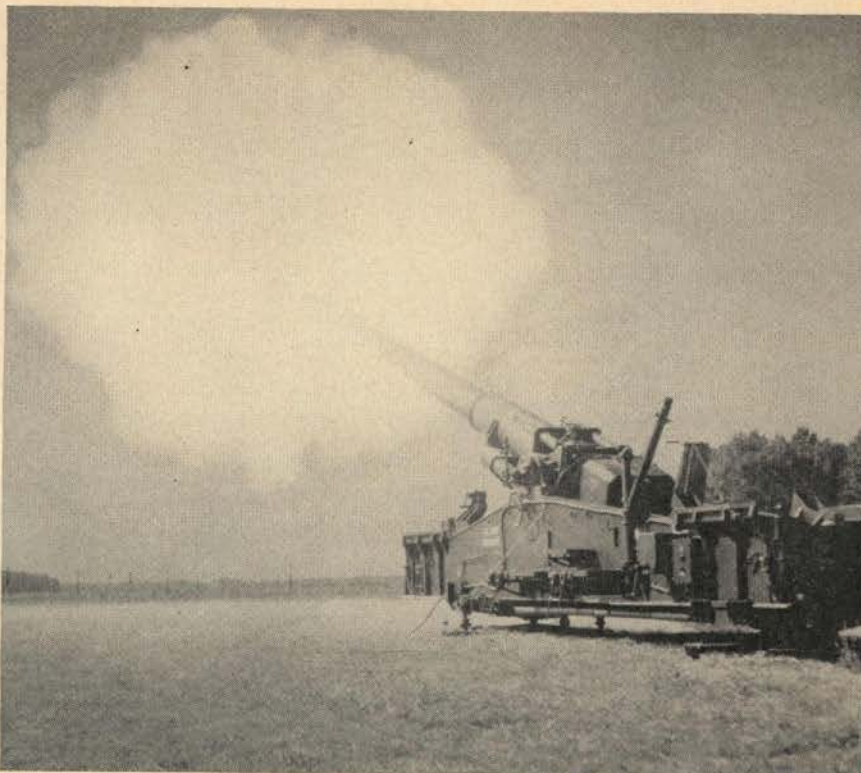
armor be thoroughly explored. It appears useless and futile to attempt to exploit the terrific destructive power of the atomic weapon with conventional infantry forces.

It is therefore quite obvious that our current, and as far as I know, our projected doctrine on warfare is still living in the past history of World War II. We have not made any progress beyond the concept of using armor in a supporting and completely subordinate role. The use of armor in mass was never attempted in World War II and there is nothing today in our doctrine which indicates its use in this manner in the future. The dead hand of the past is preventing the development of a modern, current, realistic concept of war based upon the atomic weapon, the real capabilities of armor, and a sound doctrine in which armor, artillery, airborne forces and air through the use of atomic weapons are linked together in an unbeatable combination.

Any analysis of the capabilities offered by modern means of warfare, always including the atomic weapon which can be either air or artillery delivered, the guided missile with conventional or atomic warhead, and the capabilities of air power in its normal roles, will show conclusively that the decisive role in battle has passed from the foot soldier of the past to armor. There can be no division between these decisive roles, and any attempt to divide the decisive role equally between the foot soldier and armor will cause the entire effort to fall in the middle. It is therefore quite apparent that our primary doctrine must be based upon plans which revolve around armor in mass as the main body of our protective forces.

Under modern conditions the selection of any objective for either strategic or tactical seizure must be based on the capability of armored components of the field army to reach that objective. Neither conventional infantry nor airborne infantry have within themselves the power to seize and hold any strategic or tactical objective in the face of enemy armored, air and atomic developments.

Unfortunately, the development of sound modern doctrine which will take full advantage of the real capabilities of armor especially when properly co-ordinated with airborne forces, and which will permit the full-



Tactical atomic weapons and armor can be the decisive factor on the battlefield.

est exploitation of our undoubted superiority in atomic weapons, and possibly in guided missiles, is lagging or is nonexistent, due to the failure to recognize the full capabilities of armor. Even at Fort Knox, the teaching of armor is restricted to those limited concepts which have officially received the full stamp of approval.

I believe that it is absolutely essential that a study be initiated on the very highest level to determine the effects that our limited population and resources will have on us if war with the Soviet Union, with her far greater resources, ever comes to pass. A factual analysis with decisions based on the facts as developed, is what we are proposing. We must arrive at a sound appreciation of the comparative cost of armored forces, which have some hope of success in combat, as against those organized along conventional lines. I sincerely believe that we can not hope to defeat the full might and power of the U.S.S.R. with our present balance of forces.

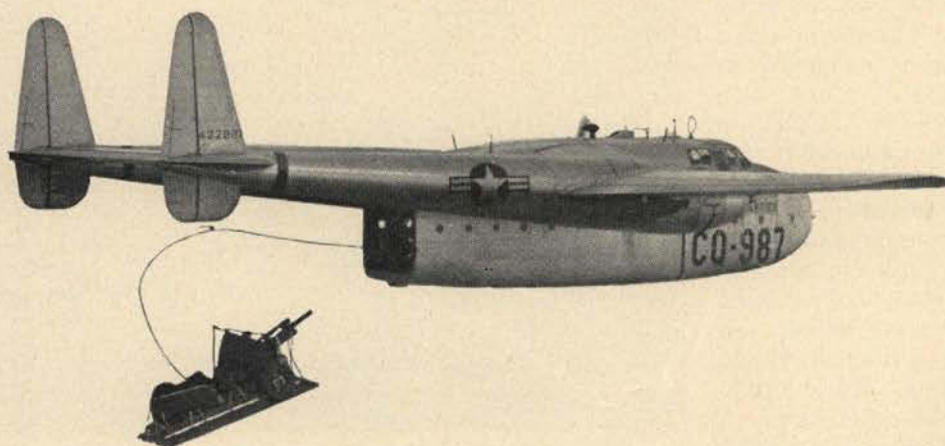
A study of our capabilities based upon total and all-out war for survival must be initiated. In the last war, I doubt that we even approached our full productive capacity for war.

Since the last war, steel capacity, aluminum capacity, petroleum capacity and electric capacity have all made tremendous increases. In addition, great strides have been made in the utilization of atomic energy as power. Although we may be short in our stockpiles of some highly critical metals, we still have tremendous resources available. By proper maintenance and employment of the Navy we should be able to reduce the flow of strategic materials to potential enemies and assure the receipt of absolutely essential materials for our own use. There is no such thing as almost winning a war—*a war is either won or it is lost*. If we do not want to face the total destruction of not only our country but our civilization, it is high time we determine the maximum effort that can be exerted for the preservation of our way of life, and the proper balance of military forces which will be required.

Armor alone cannot bring victory, but mass armored forces properly organized, employed and supported by air borne forces, artillery, engineers, tactical and strategic air and all the other arms and services can be the hub around which an invincible force can be deployed.

ARMOR

and



AIRBORNE

by CAPTAIN JOHN C. BURNEY, JR.

KNOWING that our enemy in a third World War will be numerically superior in both manpower and equipment, our leaders are striving to equip our armed forces with the most modern and effective weapons. It is our duty to employ these weapons as efficiently as possible. This means that each weapon must be placed where it can be used most effectively. We cannot afford to invest heavily in superior equipment and then fail to take maximum advantage of its capabilities.

CAPT. JOHN C. BURNEY, JR., graduated from USMA in 1946. Following a tour of duty with the Constabulary, and a school assignment, he is presently serving with Army Field Forces Board No. 1, Fort Bragg, N. C.

The 140 medium tanks in the two tank battalions of the airborne division are not placed where maximum use can be made of the tanks' offensive power. Light mobile antitank vehicles should replace these tanks and the tank battalions thus released be placed in armored divisions or assigned to corps, army, or armored cavalry groups as separate tank battalions.

The organization of the airborne division has become obsolete. The division was assigned tank battalions before concentrated efforts were made to develop lightweight full-tracked vehicles and guns. There was no mobile antitank weapon which could accompany airborne troops into an

airhead in the assault phase. However, a different situation exists today. Considerable progress has been made toward the development of light, mobile antitank vehicles, one of the earliest of which was the 105mm Recoilless Gun mounted on the Bren Gun Carrier. An effective antitank weapon capable of being delivered by parachute and assault aircraft is within our grasp.

The vehicle envisioned as being the most suitable substitute for the airborne division's tanks would weigh between 15,000 and 18,000 pounds and would have ¼- to ½-inch armor plate. It would be full-tracked and highly mobile with a ground pressure of approximately three pounds per

square inch. Main armament would be a 105mm recoilless rifle or a weapon of at least equal effectiveness. Such a vehicle would not only be used as an antitank weapon but would also possess limited offensive capabilities and be employed accordingly.

It is not intended that a light antitank vehicle be standardized for use only by airborne units. The weapon would have Army-wide application, the degree of which would depend upon the performance of the most satisfactory model developed. For example, it could well replace the tanks in the tank company of the infantry regiment. Vehicles of this type have already been developed. Early standardization of a satisfactory replacement for the tanks of the airborne division is possible and warrants immediate modernization of our present organization.

There are sound arguments for and against the reorganization of armor in the airborne division, but a thorough investigation and impartial evaluation of the advantages and disadvantages will prove that the present T/O&E is outmoded and inefficient.

With the equipment now assigned, the airborne division's best antitank defense is not available when it is most needed. The two organic tank battalions in the airborne division provide the primary protection against enemy armor, which constitutes the greatest threat to troops in an airhead. At present, there is no means by which the division's tanks can be delivered in an airborne assault. Thus, at the time when airborne troops have the greatest need for armor, they are denied the use of their organic tank battalions until ground link-up is effected.

Airborne units could, however, have their primary antitank defense at the most critical moment—during reorganization after landing when they are particularly vulnerable to attacks by enemy armor. Loads weighing as much as 18,000 pounds can be dropped by our standard troop carrier aircraft, the C-119. A lightly armored, full-tracked vehicle mounting a 105mm recoilless gun would fall within this weight classification. Now that the development of heavy-drop techniques and lightweight vehicles and weapons have combined to make possible effective antitank

protection for airborne troops at all times, the organization of the airborne division must be altered accordingly.

Replacing tanks with a lighter and smaller vehicle would result in additional advantages to airborne units. A full-tracked weapon with armor protection against small arms fire could have a ground pressure of approximately three pounds per square inch as compared to eleven for a medium tank. This means greater flotation and increased trafficability, allowing infantrymen more continuous fire support. The tank maintenance problem, with which the average airborne officer is not trained to cope, would be considerably reduced by the use of recoilless guns and less complex vehicles. Training problems would be simplified for the airborne infantry commander. Eliminating the tremendous gasoline consumption of the M48 would alleviate supply difficulties. Reduction of these problems would allow commanders of airborne units to concentrate more fully on the employment of their units.

The substitution of a lightweight antitank vehicle for the tanks of the airborne division would permit more effective employment of a very potent and very expensive offensive weapon, the medium tank. The 140 medium tanks in the airborne division are equivalent to two-thirds of the medium tank strength of the armored division, where the medium

tank is the basic weapon. Releasing these tanks would permit employment in mass, preferably as part of armored divisions.

The brief history of the tank has repeatedly substantiated the fact that armor must be employed in mass to take the maximum advantage of its offensive capabilities. One of the finest examples of this is the German defeat of France in 1940, when the Wehrmacht, with 2200 armored vehicles employed in mass, defeated the French who dispersed too many of their 4000 armored vehicles among their infantry divisions. General Heinz Guderian was the principal German proponent of the grouping of tanks in large formations. It was he who sped from Sedan to the English Channel and, held back by Hitler's orders, watched the British evacuate Dunkirk. It was Guderian who made the 240-mile sweep behind the Maginot line and later encircled thousands of Soviet troops during the Russian campaigns. The Soviets learned rapidly from the Germans, formed tank armies, and soon had the Wehrmacht's panzer formations on the run. In 1934, a French captain, Charles de Gaulle, strongly advocated these tactics in his book *The Army of the Future*, but the only ones who apparently appreciated his work were the Germans. We cannot afford to make the same mistake the French made by dispersing a large percentage



This artillery piece being loaded will provide limited antitank defense.

of our tanks among units in which they cannot make full use of their mobility and shock action.

An equally compelling reason for the removal of tanks from the airborne division lies in the obvious advantage of their employment in the armored division with supporting arms of equal mobility. These tanks would not be tied to the speed of the foot soldier but could be "married up" with armored infantry, who can stay with tanks when an opportunity to exploit success suddenly appears. In addition, armored infantry has

division. Only when employed in a team, each unit of which is fully equipped to support one another, are tanks being utilized to their maximum advantage.

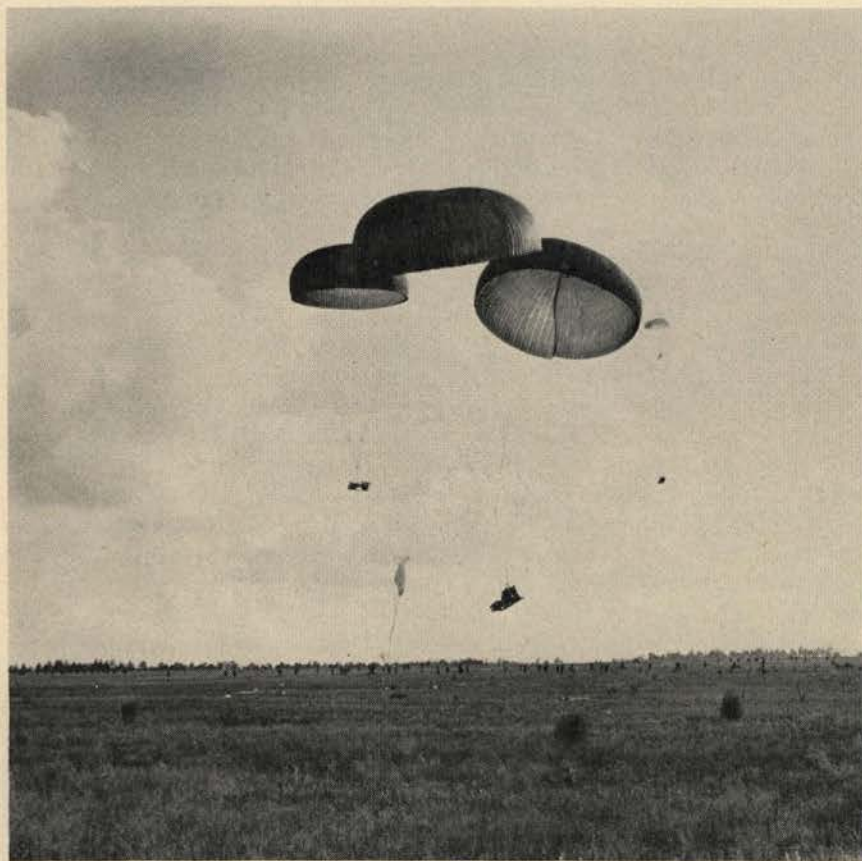
A very important and often vital consideration is the fact that tank battalions relieved from airborne divisions and placed in armored divisions or designated as separate tank battalions could then be employed by commanders of combat commands, armored divisions, and armored cavalry groups whose specialty is armor. These men have been trained in the

power and mobility! We must exploit our every advantage in the specialized Army of today and place as many tanks as possible under leaders trained in mobile warfare.

In addition, the concentration of tanks in larger units permits their employment in more appropriate terrain and against more profitable objectives. In any large combat zone, some divisions must operate in poor "tank country." Tanks assigned to these divisions would also be employed in poor terrain. On the other hand, if this armor were massed, it could all be committed in the most suitable terrain, where the tanks could achieve greater success with fewer losses. Some objectives can be taken most efficiently with infantry and others with armor. Armor of the infantry and airborne divisions would often be used against objectives inconsistent with the tank's capabilities. Massed, this same armor could attack the enemy where he is most vulnerable to this weapon. One doesn't use a screwdriver to pound a nail and a hammer to drive a screw. Likewise, we must employ an essential tool of today's Army, the tank, with a thorough understanding of its capabilities and limitations.

A leading argument against the replacement of the tanks of the airborne division is that the division will fight in a conventional ground combat role a majority of the time and will often need armor in both the offense and defense. This is true, and the division *can* have armor when needed. But rather than give the division 140 organic tanks, let us keep our organization as flexible as possible and attach tanks from separate tank battalions to the airborne division as needed. When tanks are required, the corps commander could determine the number to be attached on the terrain, situation, and the needs of other divisions. Flexibility thus acquired would result in more efficient use of armor. Those who insist that the tanks should remain an organic part of the airborne division still fail to satisfy that division's requirement for antitank protection during airborne operations.

Another consideration is that current doctrine emphasizes the fact that airborne troops, as specialists, should be withdrawn from contact as soon as their place can be taken by non-



Special parachutes are utilized to assist in the drop of heavy equipment.

protection against small arms fire, further increasing the capabilities of the tank-armored infantry team. Tanks should be supported by armored artillery rather than the towed artillery of the airborne division if continuous support is desired, for only armored artillery can properly support the advance of tanks in fluid, fast moving situations. Tanks should have the support of service units that are trained and equipped to provide for the many needs of armored units, such as the engineer, signal, and quartermaster units of the armored

use of armor, have had experience in tank battalions, and have a greater understanding of tank warfare. Certainly any tank battalion will be far more effective when working under senior commanders who fully appreciate both the capabilities and limitations of armor. Woe to the officer who underestimates the maintenance requirements of his tanks or overestimates the ability of his armor to negotiate difficult terrain. And how many opportunities for success will be lost by those who fail to realize the effectiveness of the tank's fire-

airborne troops. Perhaps in the next war airborne units may not be employed so often as conventional infantry as many people expect.

Those who object to the reorganization of the airborne division as proposed herein will then argue that cooperation and coordination between infantry (and artillery) and attached armor would be less effective than that achieved with organic tank battalions. Commanding officers of organic units, through continued training and operations, come to know each other's individual capabilities and limitations and establish SOP's which facilitate close cooperation. This, too, is very true and very desirable; but is it as strong an argument against the removal of the tanks from the airborne division as those set forth advocating the change? The argument is further weakened by the fact that a close understanding between individual tank and infantry units can be achieved by habitual attachment of the same units and a thorough training program emphasizing the tank-infantry team.

Another argument against the substitution of a lightly armored anti-tank vehicle, probably mounting a recoilless 105mm gun, for the tanks of the airborne division lies in the obvious disadvantage of pitting such vehicles against enemy tanks. It is certainly true that the most potent weapon against an enemy tank is another tank. Light, mobile antitank vehicles with relatively short ranges and poor armor protection are not as capable as tanks at seeking and destroying enemy armor. Also, such a weapon is primarily an antitank vehicle and, as such, does not possess the versatility and offensive capabilities of the tank. However, some effective antitank weapon must be made available for use during airborne assaults. We must substitute the best antitank vehicle which can be delivered by parachute for the medium tank of the airborne division and make the airborne division airborne. As emphasized above, tanks can always be attached as required to increase the offensive power of airborne units.

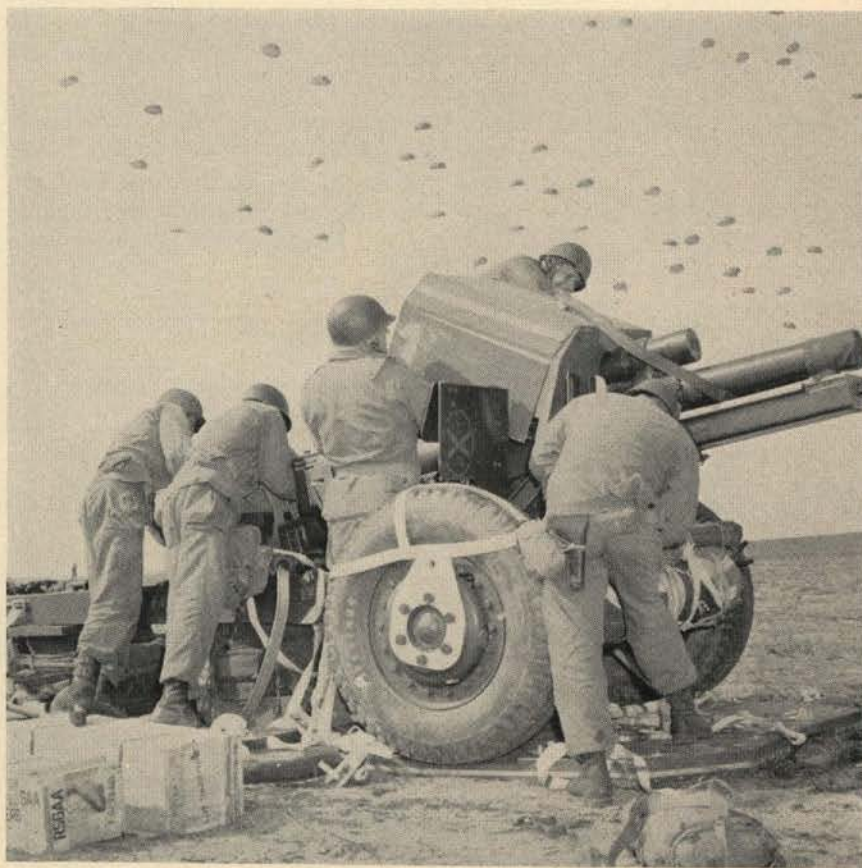
To keep step with our rapid progress in the development of guns and vehicles, still another change should be effected in the airborne division. The primary antitank weapon of the

reconnaissance company, the M20 75mm Rifle (Recoilless) mounted in the ¼-ton truck, should be replaced by the same vehicle designated to replace the tanks. The relative ineffectiveness of the M20 Rifle mounted in the ¼-ton truck has already been proved in combat, in Korea. We have better antitank weapons; one of them should be substituted for the present T/O&E weapon.

The M24 Light Tank was eliminated from the airborne division because it could not accompany airborne units in airborne operations. At one

pace with developments in guns, vehicles, and heavy drop.

To create the armored corps as urged in recent articles in this magazine by prominent leaders in mobile warfare, it is essential that we economize in our past overgenerous assignment of tanks. There should be no organic armor in units where maximum advantage cannot be taken of the tank's offensive capabilities. The airborne division is the most obvious organization in the above classification, so let us start there. Organize those tanks into armored divisions or



As paratroopers float to earth, a team removes 105mm howitzer from its harness.

time, the 75mm Recoilless Rifle on the ¼-ton truck was the best antitank weapon which could be delivered by parachute. However, times have changed. Better antitank vehicles of the same weight class are available. Great strides have been made in the parachute delivery of heavy items of equipment. We must put teeth in the primary reconnaissance and security unit of the airborne division, give it an effective antitank gun, increase its mobility, give it increased armored protection commensurate with air drop capabilities, and keep

separate tank battalions for assignment to corps, armies, and armored cavalry groups and substitute for them a vehicle which airborne troops can use to greater advantage; and airborne units, armored units, and the Army as a whole will greatly benefit. The parachutist in an airborne operation will have the antitank protection he requires, more tanks will operate in mass with supporting arms of equal mobility, and the Army will be making the most effective use of one of its most decisive weapons, the medium tank.

Sum & Substance

A regular feature in ARMOR, where you may express your views in approximately 500 choice words—the effective medium between the letter and the article. This section is open to all on any subject within the bounds of propriety. Name and address must accompany all submissions. Name will be withheld upon request. No pseudonyms.

Within the Airborne Division, there are two medium tank battalions, both of which are under division control. At the present time there is no practical method for airlifting the medium tank. Thus the tank battalions become a part of the "landtail." However the necessity for the immediate breakthrough of these battalions to support the Airborne personnel after a drop cannot be overemphasized. For the various roles that these tankers assume, ARMOR has called on the 44th Tank Battalion, 82d Airborne Division. In addition to their roles during the attack, counterattack or defense, the Battalion Commander and his Company Commanders reiterate, time and again, the ever present problem of supply and resupply. Further, the armor-infantry teamwork is once again proven.—THE EDITOR.

The writer of the following received his commission from North Georgia College in 1933. During World War II he served in the Mediterranean Theater with the 757th Tank Battalion, in support of the French Expeditionary Corps. Subsequent to the war he served a three-year tour with the Joint Brazil-United States Military Mission in Rio de Janeiro, as Chief of the Armored section. He has commanded the 44th Tank Battalion of the 82d Airborne Division since July 1952.

The basic principles of armor employment in an airborne division are the same as those used for armor in a standard infantry division. The problem in the airborne division is not how to use the armor, but how to keep it available for use.

The armor of an airborne division consists of two medium tank battalions, both of which are directly under division control. There are no Regimental Tank Companies, and there are no tanks in the Division Reconnaissance Company. The reasons for these differences from the standard infantry division become apparent when we stop to consider the fact that there is, at the present time, no practical method of airlifting the medium tank. The largest available carrier, the C-124, will lift only one light tank. Therefore, the armor of the airborne division, though organic, is not air transportable.

Primarily for the same reason, when planning an airborne operation, the division is divided into two

tactical echelons: "the assault" and "the follow-up." The assault echelon is made up of parachute and air landed elements which seize the airhead. This echelon normally consists

All photos U.S. Army



Lt. Col. A. L. Cochran

of three regimental combat teams, the division reserve and division troops. The follow-up echelon is that portion of the division, less administrative units, which is not initially used in the assault. It joins the assault echelon as soon as possible by land, air or water.

Discounting an amphibious operation, and remembering that the two tank battalions are not air transportable, it becomes obvious that if the units in the airhead are to have ar-

mor support, a land link-up must be effected. The follow-up echelon, consisting of the two tank battalions, plus any tactical elements of the division not air transported into the airhead, may be termed the "landtail" of the airborne division.

The present concept of a normal link-up type airborne operation is as follows: The air assault elements of the division are marshalled at several airfields, usually a hundred miles or so behind friendly lines. Concurrently, the landtail goes into an assembly area close behind our front lines, and prepares for the link-up operation. On D-day the assault elements are dropped on the objective deep in the enemy rear and secure the airhead. It is extremely unlikely that the armored landtail will make the link-up drive alone. Normally it will be attached to a larger ground link-up force such as an armored division or a standard infantry division. This will depend on many factors such as friendly forces available, enemy situation, distance to be travelled to the airhead, etc. Let us assume that in a given situation, the airborne division's landtail is designated to spearhead the larger link-up force. The two tank battalions should be reinforced with sufficient infantry, engineers, and artillery to make a balanced force. A solution would be one infantry battalion, one engineer company, and the medium battalion of airborne division artillery. Tactical air support is essential. The senior tank commander should command the task force.

The attack and penetration of the

enemy lines by the link-up must begin simultaneously with, or shortly after, the airborne elements drop on their objective. In order to effect the breakthrough, the closest possible coordination with friendly front line units is essential. The fullest support of their available fire power should be secured to soften up the point selected for penetration.

Once the enemy line has been penetrated, the armored link-up force will enter into what resembles the exploitation phase of an armored operation. The difference is that the primary mission is to join the airborne division in the airhead as quickly as possible, and destruction of the enemy is secondary. For this reason, the task force commander should be assigned an axis of advance which permits him to by-pass enemy resistance encountered.

Upon approaching the airhead area, the need for early recognition and communication with the assault elements in the airhead perimeter is vital. There is nothing more embarrassing than a meeting of two friendly forces, each of which thinks the other is the enemy. This is where careful prior planning and coordination pays off. Let us consider several of the methods available for effecting the joining of the two forces.

A liaison party from the armored task force should jump with the assault elements into the airhead. The mission of this party is to help coordinate the approach and entry of the task force into the airhead area.

Light aircraft should be used to the maximum. One or more such aircraft from the assault elements should be designated to contact the L-19's of the approaching task force.

A system for challenge and reply by the use of pyrotechnics should be previously arranged.

No-fire lines should be established for both the elements in the airhead and the approaching link-up force. Neither side would shoot past their line unless specifically requested by the other.

What happens to the two tank battalions once the link-up has been completed? Within an hour or so after the link-up, one would normally find the following situation: One battalion would split up with a tank company attached to each of the three regimental combat teams. The other

tank battalion would be held in division reserve. Thus we find the armor distributed in the same manner as the standard infantry division with its three regimental tank companies and the division tank battalion.

The armor of the airborne division, once the link-up is completed, adheres to the normal principles of employment of tank companies and tank battalions.

LT. COL. ARCHIE L. COCHRAN

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The writer of the following served in the Pacific during World War II. He is a Quartermaster Officer on a two-year troop duty tour with Armor. He has commanded Headquarters and Service Company of the 44th Tank Battalion since January 1953.

Modern warfare, which exploits the characteristics of armor—firepow-



1st Lt. R. H. Shuford

er, shock action and mobility—to the fullest, requires that today's armor leaders possess considerable knowledge of supply.

Logistical support of highly mobile tank battalions organic to an airborne division is a problem of major importance which necessitates detailed planning to effect maximum coordina-

tion at all levels. The logistical maxim "THE IMPETUS OF SUPPLY IS FROM THE REAR," is especially true in the tank battalions of the airborne division.

Armor columns, spearheading the penetration to link up with infantry elements expanding the airhead well in advance of front line positions, frequently create a large gap between themselves and their combat and field trains. This situation demands that prior planning concerning supplies focus around the five classes of supply and necessary transportation of the basic loads.

The Headquarters, Headquarters and Service Company of the Tank Battalion with its organic supply platoon furnishes the means for accomplishing the function of supply. Composed of 29—2½ ton trucks, 1—¾ ton truck and 1—¼ ton truck, the supply platoon provides the necessary transportation to effect supply action for forward fighting elements. Normally commanded by a Lieutenant, the supply platoon is divided into three sections: an ammunition section, a POL section and a ration section. This division facilitates control and expedites the handling of the three major classes of supply.

Class I items, rations and water, are supplied to front line tankers, in a fast moving situation, during the early hours of darkness by a link-up of kitchen trucks with tank crews at a pre-arranged location. For the initial phase of the link-up the Small Detachment 5 in 1 Rations are suited especially to provide an adequately balanced diet for a short period of time. A three day reserve of "5 in 1" issued to tank crews in the assembly areas prior to the jump-off will generally take care of emergency situations such as individual tanks cut off due to the tactical situation. The Operational "B," field rations, are brought forward in kitchen trucks to give crewmen at least one hot meal per day when the tactical situation permits.

Water may be issued on a can-for-can exchange basis using the two water cans on the M-47 tank as original cans, or O V M cans may be filled directly from the water trailer which is brought into the forward area with the kitchen trucks.

Class II, items of T O & E allowance, and Class IV, items for which

no prescribed allowance has been determined, present no problem in the tank battalion. Resupply is accomplished by the company by making out requisitions which are forwarded to battalion and from battalion to division for supply action.

Class III items, petroleum, oils and lubricants, are supplied directly to tanks by fuel trucks of the supply platoon located in the combat trains area which move forward and are met by company or platoon guides and directed to the tanks. Refueling of tanks from five gallon cans is time consuming and requires considerable physical effort. There are no automatic fuel dispensing trucks organic to the tank battalion. The entire basic load of gasoline is carried in five gallon cans transported in the trucks of the supply platoon.

Class V, ammunition, is supplied initially in the assembly area and resupply is accomplished by using a transportation order. Refueling and the supply of ammunition are achieved concurrently by supply platoon personnel.

Maximum coordination, reliable communications and detailed planning are the required essentials deemed necessary to achieve prompt supply action within the tank battalion of the airborne division.

1ST LT. RICHARD H. SHUFORD

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The writer of the following graduated from The Armored School OCS in February 1946. From 1946 to 1949 he served with the United States Constabulary in Germany. Following a stateside assignment with the 3rd Armored Cavalry Regiment (L) he was transferred to Korea where he served as Platoon Leader and Company Executive Officer with the Reconnaissance Company of the 25th Infantry Division. He has commanded A Company, 44th Tank Battalion since November 1952.

The one phase in particular where armor has proved its worth is the link-up phase of an airborne operation. It is during the link-up that

armor literally "comes to the front." While the infantry, artillery, engineers, etc., can be transported to the vicinity of the objective by aircraft and delivered by parachute, there are no means at the present time, of transporting and delivering a medi-



Capt. W. H. Harr

um or heavy tank by aircraft. A definite need for a strong, mobile force exists, however, and this need is filled by the two tank battalions organic to the airborne division. Detailed prior planning, speed of execution, and facility of communication are vital in the link-up phase of an airborne operation.

After careful planning, the Airborne Infantry Regiments with their supporting artillery, engineers, etc., are dropped in the vicinity of the division objective. At a pre-designated time the two tank battalions, which have been assembled close to the front lines, move out and either penetrate the enemy's line of defense or envelop his flanks. In a large operation the tank battalions are close on the heels of an attacking infantry division or a comparable force and break through exploiting any gains.

When the penetration or envelopment is completed, the primary mission of the tank battalions is to join forces with the airborne units. Here speed is important. As a result, much enemy resistance is by-passed. With the main line of resistance behind

them, the tank battalions can usually plan on a headlong dash for the airhead and the completion of their mission. It must be remembered, however, that the Airborne Infantry Regiments are behind the enemy's lines and all troops are considered hostile until definitely proved otherwise.

Since the armored elements are racing toward the airhead, it is necessary for the liaison officer who has accompanied the airborne units to establish contact with the tank unit commanders. As the armored units approach, the liaison officer contacts the tank battalions by use of voice radio and directs the units to an assembly area where they will receive further orders.

Once the link-up has been completed the armor will be used as needed, either to ward off any enemy counter-attack or to aid the airborne elements in their drive to the final objective. In either instance, one of the battalions may be directed to attach one company to each of the three Airborne Infantry Regiments, leaving the other battalion to operate as a unit.

From this point on, the airborne division is comparable to the standard infantry division and continues its mission in much the same manner. There is one difference, however. Resupply of the airborne division is continued by air drops until the main supply route can be secured.

Armor, in supporting an airborne operation, as in any type of armor operation, must be fully cognizant of three factors: prior planning, speed, and communication. Without all three of these the operation may not succeed.

CAPT. WILLIAM H. HARR

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The writer of the following entered the Army in 1942. At the completion of OCS in the same year he was assigned to the 11th Armored Division. Upon being recalled to active duty in 1950 he served in Korea with the 25th "Tropic Lightning" Division. He returned to the United States in 1952 and was assigned to the 44th Tank Battalion of the 82d Airborne Division.

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sion. He has been the Company Commander of B Company since February 1953.

In many ways the defensive role of armor in the airborne division is much like that of armor in the standard infantry division. However, for the purpose of getting the most out of the possibilities of armor in the highly flexible airborne unit let us begin with a tactical situation.

Baker Company has been attached to a Regimental Combat Team from the airborne division. The link-up of the tanks and the infantry has been made without loss of tanks from the company.

I, as company commander, leave my executive officer in charge of the company. I will report to the regimental commander and find out his plan of defense of the airhead. Normally he would use me as armor advisor to the Regimental Combat Team. I study the intelligence reports, make my estimate of the situation and then make my recommenda-

tions to him. This estimate is largely based upon one factor: Is an enemy armor attack forthcoming?

If there is no such attack coming I would split my company and assign a platoon to each of the three battalions and hold one tank platoon in

reserve under regimental control.

If the enemy tank attack is imminent, the entire company would be in reserve as a unit. This reserve would be under regimental control. This is an airborne modification of the reserve plan of the standard mobile reserve.

After the airhead is secure and the coordination is accomplished between the tankers and the infantrymen, we move out to take our objective.

The Regimental Combat Team achieves the objective with little loss and is now in the process of establishing a defense on the newly won position. Here the problem of resupply becomes acute. Being deep in enemy territory the only means of supply, until the supply route has been secured, is by air. Due to the limited capacity of the aircraft it is often difficult to get our basic load of fuel and ammunition.

With resupply completed we would again be under regimental control, depending upon how strongly the commanders suspect an enemy armor counterattack.



Capt. E. H. Swan



Members of a tank crew of the 44th Tank Battalion firing during a night tactical problem on Exercise "Snowstorm."
ARMOR—July-August, 1953

At the objective we move into a sustained defense because of the preponderance of dismounted elements in the airborne regiment. The mobile defense does not afford the protection of the terrain, individual shelter, and other defensive works as does the sustained defense.

Although the regiment habitually uses the sustained defense, it is possible for the tanks to go into a mobile defense forward of the regiment doing a general outpost mission in front of the main line of resistance.

Like any other armor unit, this company will utilize its mobility and shock action to the limit, depending upon the existing situation. These missions will include furnishing direct fire support to the main line of resistance, adding strength to the counterattack, providing depth to the antitank protection and acting as a covering force.

This cannot be held as a general rule, because no set rule can be made for the employment of armor when used with an airborne division.

Armor in the airborne division is used in defense in practically the same way armor is employed with the standard infantry division. Armor can protect the infantry against the enemy's individual and crew-served weapons, and, of course, the best defense against a tank is a tank.

CAPT. EDWARD H. SWAN

◆ ◆ ◆

The writer of the following returned to the United States in November 1952 after serving a year in Korea as company commander in the 89th Tank Battalion of the 25th Infantry Division. Subsequently he assumed command of the 25th Reconnaissance Company of the same division. He is a qualified parachutist, completing jump training in 1945. He has been the Company Commander of C Company, 44th Tank Battalion, since February 1953.

The attack, using the armor attached to the airborne division, is essentially the same as it is in any other type of armor-infantry attack with one exception. That variation

is the problem of supply during the attack.

After the initial link-up is made of the airborne and ground units, the headaches of the armor company commander commence. The company commander is confronted daily with the problem of supply for his unit while it is deep within the enemy lines.

All of the supplies during this phase of the operation—ranging from rations to wedge bolts—must be air dropped by the supporting Air Force.

The airborne operation does have more support from the Air Force than the non-airborne unit does. Balancing this added support, there is the lack of support from the heavy weapons organic to the regular Infantry Division.

An airplane can carry only so much weight, so the airborne unit is put in short supply of heavy supporting weapons until the ground trains can be brought to them. To offset this shortage, the company commander must depend on the added aggres-



Capt. H. L. Kaplan

siveness and spirit of such an organization.

During the attack on a common objective, which starts after the tanks have penetrated to the infantry positions, the tankers and the infantry must maintain the utmost in coordination.

In the attack, the tank may be assigned to a regiment, a battalion or a company. On the other hand, it may be broken down into platoons and the platoons "farmed out" according to the mission. If this is the case, the job of company commander becomes more difficult because of the lack of control he has over his company.

Prior to launching the actual attack, the G4 plans for the various drop zones to be set up for resupply of gas, oil, parts, etc. It is the business of the company commander to know exactly where these drop zones are, and the alternate positions that may be used. At the same time the company commander must know the casualty evacuation plan, because casualties in an operation such as this must, by necessity, be air-lifted out.

Because of the character of this type of attack and the problems of complete supply and maintenance of the tanks, the attack must be a limited objective with time available to resupply and reorganize before launching the next attack.

During the attack, the tank-infantry team must work closely together to afford mutual protection and support. This protection is even more necessary in this type of operation because of being so deep behind the enemy lines.

Communication during the attack is primarily by voice radio. With the new family of radios the close coordination between the tankers and the infantrymen can be effected much better.

Although the basic tank-infantry tactics in the attack are the same in the airborne division as they are in the standard infantry division, there are four problems or points that must be taken into consideration by commanders before they can be sure of a successful attack. They are:

Supply problems—the need of air dropping all supplies.

Complete coordination between the tanks and the infantry.

Both the tankers and the infantry must be more aggressive in order to insure success in the attack.

Commanders must have prior plans made in case of an enemy counter-attack or encirclement by the enemy.

CAPT. HAROLD L. KAPLAN

ARMOR AT THE CROSSROADS

by **LIEUTENANT COLONEL ROBERT B. RIGG**

RIGHT now certain of our specialized military schools have problems in which the student is given a battlefield objective, and then he is asked, "what would you use to destroy this objective—an armored division, or an atomic weapon?" Destruction of the enemy at the objective, or denying the objective to the enemy is the object of this map exercise, but plain dollar cost is often the key to the "school" solution, which is to use the atomic weapon. An armored division costs not only millions of 52 cent dollars, but manpower besides. Atomic shells or bombs are not cheap either—but we have reached the age and era when Armor is considered by some to be a luxury on the battlefield.

Armor is in serious competition with atomic weapons. The equations are drawn, and the dollar sign is plainly regarded as *the key* in some solutions of the future. U.S. Armor is at the very crossroads of its existence. The fallacy of cost comparison in a school problem like this is that once exploded the particular atomic weapon or shell is money completely expended. However, once projected into action, an armored division even with heavy losses is not completely dissipated, and it is generally capable of future action and follow-up. Nevertheless, the atomic specialists stand pat on their dollar comparison cliché—and they are selling it! This is healthy competition for Armor, but the heat of competition shouldn't warp our military objectivity and perspective.

In some minds, our arm has become so "expensive" that a dangerous circumstance is being bred whereby

U.S. Armor may decline forever in terms of proper strength and realistic combat perspective.

At The Armored School in 1949, I listened to a dissertation that predicted a possible total of 60 Armored Divisions in the event of total mobilization. I regarded this as wishful thinking on the part of armored enthusiasts, for at that time the *Pentagon Planners* (probably) were thinking more in terms of 3.5 rocket launchers than in tanks. Ever since then I believe there are growing indications that any future armored forces (in mobilization) would be less than our World War II total of 16 armored divisions.

It is most timely to examine the future of our Armor in the light of these factors: the official Washington viewpoint; the Moscow directed masses of tanks; and the atomic influence (friendly and hostile).

Armor needs leadership—in Washington!

General George S. Patton raised hell on the battlefield. It is grimly unfortunate that he couldn't have lived longer, for among many other contributions he might have accomplished the same thing in Washington—on behalf of Armor. Recently, Armor has lacked high-ranking leadership in Washington where significant decisions affecting future combat successes (or defeats) have been fought out. This is not to pick a fight with atoms or infantrymen, but one must acknowledge that Armor men have apparently been almost a voiceless minority in the Capital where decisions affecting the nation's future have been made.

One by one, our highest ranking tank leaders have been retired since 1946. General Alven C. Gillem, General Ernest N. Harmon, General Jacob L. Devers, General Willis D. Crittenger and others have been retired in these succeeding years. Armor needs leadership in

the important acts of the successive Washington scenes in that important playlet of "*How to Win in Any Possible or Potential Future War.*"

It is axiomatic that among our real tank leaders, none have ever been idolatrous to the false concept of "preserve for us thy arm of Armor so that we professionals may advance and be promoted." Our generals, beginning with General Chaffee, fought for concepts, budgets, designs and specifications to successfully meet the national goal of success in war, when and where war had to be waged. Today, the voice of our tank leaders should be listened to with considered weight. We may lack organization in higher military circles with which to properly project our ideas born of sincerity and professional knowledge. However, it is incumbent upon today's leaders of Armor to justly point up the need for more tank forces. There may be deaf ears, but Armor's leaders owe it to their nation to express with courage their studied concepts.

The fight for a slice of the dollar budget is rough. We in Armor have been too complacent to date, too content to concede, too inclined to acknowledge our equipment is costly; and to do nothing about argument for more of it when the cold statistics of Korea's hot war acknowledge that, for all the excellence of air and naval supremacy, the mud-soaked and dust-ridden ground forces pay the final and bloody price for the gains in war. Korea's battleground is restricted; tomorrow's can be open and unlimited.

What we need is some plain reckoning in military factors. The capture of objectives and defeat of an enemy cannot be reckoned entirely on a budget slide rule!

Armored officers seek no fight with fellow service members, but we have reached the point wherein we feel our arguments should be listened to

LIEUTENANT COLONEL ROBERT B. RIGG, presently on duty in Europe with the Seventh Army, commands the First Battalion, Sixth Armored Cavalry Regiment. He is the author of *Red China's Fighting Hordes*.

with considered weight—in the interests of our nation's defense. General Paul M. Robinett has recently presented the nation with some sound logic in this magazine. Armor needs more voice in the Pentagon.

Armor and Atoms: I have seen tanks subjected to atomic bomb blasts in certain tests. For security reasons I must drop the subject there, except to say this: I would like to see some of the classification on those tests reduced to where the men in armored battalions, like my own, can be better instructed and trained in the hazards, risks and safety factors of being in tanks near atom blasts. Ours is the arm most capable (because of its speed and armor protection) of exploiting through radiation-ridden and demoralized areas of atomic blast. Furthermore, armored units with their heavy concentration of threatening fire power, are likely targets for enemy application of atomic weapons. Our enlisted men need to know better the effects of such weapons on tank crews so as to imbue our own crews with proper confidence. For reasons many officers in lower echelons do not understand, information of this sort is not getting down to the man who will be the first to need to know it.

Who is going to defeat Moscow's masses—if?

When you are situated, as some of us are, within an hour's ride from the Iron Curtain in Europe, you give this matter considerable thought and attention especially since your mission is to command a battalion, a regiment, a company, or a tank. The problem of how to defeat Moscow's masses of tanks, infantry and self-propelled guns, is one you concentrate on and discuss. We expect to be outnumbered; we would expect to engage and defeat six tanks each to our one, and by better gunnery and new fire control instruments come out on top. Our training is predicated on the matter of taking on superior numbers. However, outnumbered by five is one equation; outnumbered 25 to 1 is another one entirely. From tank crews to infantrymen and artillerymen, there is fine confidence in the Seventh Army in Germany today. But, against the potential of our enemies, the need for more matériel in the form of

armored divisions on our side is strikingly obvious. It is not enough to stem an armored enemy horde with bazookas and bare flesh. To defeat it you have to wade rapidly into the mass and cut it up. That is Armor's mission but you need divisions of tanks to do it. The pitting of bare flesh and bare chests (however brave) against communist armor is not in keeping with either American ideas of national strength or U.S. industrial and technological progress. The Soviets went through their "Molotov Cocktail" stage wherein individual men took on German tanks; but note the conspicuous emergence of Soviet tank and SP masses (to meet enemy tanks) in World War II. The Soviets, the greater butchers of their flesh, could have well expanded their hordes of hero tank-hunters but the experienced military leaders matched steel with steel. The United States may be a reservoir of heroes, but we lack the population to expend these men lavishly. Furthermore, Americans deserve to fight with modern weapons and not just relatively primitive, short range, and heroic types. Moscow's masses are not only multiplied humans on foot and horseback—they are multiples of men-manned machines. We who might have to defeat them should at least have the matériel to make us efficient on a *multiplied* basis.

Hostile and Friendly Atoms: Several inches of hard steel give men better protection and self-confidence against atoms and their radiation than does the infantryman's wool shirt. When the living stir, rise, and emerge from the chaos of an atomic blast, they will say their frank prayers and give thanks to some mode of earth-given or man-made protection; and among those in the branches of infantry, artillery and armor it will be the latter who can not only move their limbs but *move fire power*—and with more speed, rapidity, and violence than any of the other much valued arms.

Armor is at the crossroads of its future existence in appropriate power. Our nation in war must balance between success and failure on the proper proportion of the various arms. Armor has not only the weight, but the speed and violence to multiply its weight.

Chief of CMD



Major General James Clyde Fry, Chief of the Career Management Division, Department of the Army, graduated from the United States Military Academy in 1922. He was commissioned a Second Lieutenant in Infantry. During World War II he commanded the 350th Regiment of the 88th Division. While serving with the 350th Infantry, he received the Distinguished Service Cross. Later he was made Assistant Division Commander of the 88th Infantry Division in Italy. Following several Army Field Forces and Department of the Army Assignments, he was appointed Deputy U. S. High Commissioner in Austria. General Fry was transferred to the Far Eastern Command in Korea where he was Commanding General of the 2d Infantry Division until May of this year when he returned to the United States for his present assignment.

The message from the Chief of the Career Management Division was addressed to the Editor of ARMOR, but it is deemed important enough that it should be directed to all Armor officers and is so headed. Comments regarding the future publication of articles from the Chief of the Career Management Division have been expressed editorially on Pages 30 and 31 in this magazine—THE EDITOR.

A Message from the Chief of CMD

To All Armor Officers:

I have recently been given the responsibility as Chief of the Career Management Division and appreciate the opportunity you have offered to use your magazine as a medium for contacting Armor officers Army-wide. I believe this will be helpful to the Armor Branch in implementing assignment policies and of value to all Armor officers by giving them a knowledge of our responsibilities and our procedures.

During the greater part of the last four years, I have served in Europe and in Korea. In these assignments I have frequently heard combat officers remark that the chiefs of the technical and administrative services evidenced greater concern and exercised greater consideration for their officers than did the Career Management Division for the combat officers. Without attempting to explain or refute such testimony and without intended implication of those who have gone before me, I want to assure all officers that this office represents the head of the military fraternity to which they belong. We are intensely interested in the welfare and the progressive, advantageous assignment of each individual officer and within the limits imposed by military requirements our policy is to comply as accurately as possible with the requests of individual officers.

As I have evaluated individual reactions to Department of the Army assignment procedures, it has frequently been evident that a substantial number of officers fail to appreciate the fact that the Career Management Division is the appropriate agency for officers of the combat arms to address requests for consideration and recommendations for improved procedure. The Signal or other technical officer knows that such a letter to his Chief will receive a quick and considerate answer. The combat arms officer will receive equally expeditious consideration from communications to the Chief of his Branch, Career Management Division, or merely to the Chief, Career Management Division. I especially solicit comments and recommendations from general officers and senior field officers who have noted what appeared to be ill-considered and improper assignments.

This is not intended to be a lengthy and detailed explanation of the Department of the Army career program. However, I feel it will be helpful to overall understanding of the broad assignment pattern if I mention the fact that our primary mis-

sion during this era of quasi-peace is, as always, to fit officers to the essential jobs necessary to keep the elements that make up the Army in a high state of combat readiness. Our Career Management goal is to rotate officers through different assignments to give them on-the-job practical training. In this latter mission our objective is to develop to the utmost the inherent abilities, aptitudes, skills and accumulated knowledge so that the maximum number of officers may eventually reach their ultimate potential, to their betterment and for the good of our Army and Nation.

When conflicts between our Career Management Program and the combat requirements of the Army occur, Career Management assignments must of necessity be interrupted. As a matter of fact, the basic concept of Career Management was that the program was intended to apply solely to the peacetime development of officers and this fact needs more thorough recognition. In addition, there are a multitude of conflicts that arise concerning the assignment of officers even though we endeavor to resolve all problems by the application of orderly and carefully developed policies designed to give equitable treatment to everyone. There are no mysteries or secrets about such policies and it shall be my aim to eventually publish detailed information concerning methods of selecting officers for overseas assignment, procedures for selecting officers to attend military schools, and in general to answer the questions that are uppermost in officers' minds. I would like to assure all officers that I realize fully that each assignment is of intense importance to the individual selected to perform the special duty requirement. There are good assignments and there are others that offer no particular professional advantages or other attraction. All assignments must be filled, and the individual who has a satisfying assignment this year should realize that he is moving into that category eligible to receive a less desirable assignment on his next change of station.

I hope that in each future issue of your magazine you will permit the Career Management Division to use your periodical to further acquaint officers with our methods of operation, and to supply other information of broad interest.

J. C. Fry

Major General, USA

Chief, Career Management Division

THE TOP COMMAND IN EUROPE

Many changes have occurred since this pictorial spread was published in the May-June, 1952 issue of ARMOR, pointing up the top military command structure in Europe. Numerous requests have been received by this magazine to repeat the pictorial feature. With only one key person still in the same position, compared with a year ago, it is time for another look. We will venture to say that by the time this is read there will be further changes. This capability to rotate key personnel clearly demonstrates the depth in top command leaders available within the United States Army. The mission of the United States Forces in Europe has not changed; nor has the importance of that area diminished. It is still a vitally important station in the cold war and the United States forces still form an important link within NATO—ready for whatever exigency might arise. In addition to showing the top command down to and including division level, we would like to expand even further but space does not permit.—THE EDITOR.

In the next issue we will have another look at the top command in the Far East.

U.S. Army Photos

SHAPE COMMANDER



Gen. Alfred M. Gruenther
Supreme Commander, Allied Powers

SEPARATE COMMAND COMMANDERS



Lt. Gen. William H. Arnold
CG, U.S. Forces Austria



Maj. Gen. Bernice M. McFayden
CG, TRUST, Trieste U.S. Troops

THE DIVISION COMMANDERS



Maj. Gen. C. T. Lanham
CG, 1st Infantry Division



Maj. Gen. L. L. Doan
CG, 2d Armored Division

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EUROPEAN COMMAND



Gen. Thomas T. Handy
Deputy Commander in Chief, EUCOM

USAREUR



Lt. Gen. Charles L. Bolte
CG, United States Army, Europe

COM Z USAREUR



Maj. Gen. Lemuel Mathewson
CG, USAREUR Communications Zone

SEVENTH ARMY



Lt. Gen. William M. Hoge
Commanding General, Seventh Army

THE CORPS COMMANDERS



Maj. Gen. Ira P. Swift
Commanding General V Corps



Maj. Gen. James M. Gavin
Commanding General, VII Corps

THE DIVISION COMMANDERS



Maj. Gen. Joseph H. Harper
CG, 4th Infantry Division



Maj. Gen. Cortlandt Van R. Schuyler
CG, 28th Infantry Division



Maj. Gen. Charles K. Gailey, Jr.
CG, 43d Infantry Division

Combat Effectiveness

ARMOR has frequently advocated the full utilization by the Army of all developments in the technological sphere to strengthen the combat effectiveness of our ground forces.

Because of our nation's outstanding position in industry, including design and manufacture, it is on this technological level that the advantages are ours, where we should plan to meet any potential enemy rather than try to match him man for man with mass manpower armies.

It is obvious that we should make the most of our country's national resources and capabilities, particularly in the automotive field, and in the sphere of aviation, electronics, and kindred developments.

We should give our men on the battlefield the most modern weapons and equipment to

assure them of the greatest hope for victory and the best chance of survival.

This is, and should be, THE AMERICAN WAY.

For these reasons, ARMOR enthusiastically joins in the accolade accorded the outgoing Chief of Staff, General J. Lawton Collins, for his insistence that an atomic ground weapon be developed for tactical employment. The recently tested 280mm atomic cannon can well be expected to play an important role in any future combat on the ground.

Of added interest, and again for the reasons stated above, are recent forecasts which indicate technological developments as follows:

A new tank-destroyer (called the Ontos)

An Innovation

Elsewhere on these pages (page 27 to be exact) you will find an open letter to all Armor officers from Major General J. C. Fry, the Chief of the Career Management Division, Department of the Army, wherein he asks that space be allowed him for the regular contribution of articles to ARMOR with respect to various career management activities of concern to all combat arms officers.

It is believed that allowing General Fry such an opportunity would do much to an-

swer the various questions that all officers have concerning their next assignments—possible school opportunities—openings for special assignments—and diverse questions which they might otherwise have.

This is not intended to be an elucidation of Department of the Army policy concerning officer assignments. The primary purpose is to have an outlet for information concerning each and every member of one of the combat arms, pertaining to his professional military career.

New anti-aircraft vehicle with multi-mounted machine guns
 Modified light tank
 New 60-foot tank bridge, transported and emplaced by tank
 Modified battlefield radar for detection of hostile infiltrations
 Another type shell for the 280mm atomic cannon providing increased range
 Long range IFF extending the range for identification of hostile aircraft
 Noiseless outboard motor for quiet approach in tactical areas
 Gun to replace present 155mm gun
 Howitzers to replace 105mm and 155mm howitzers

The above forecasts, which were reflected from testimony recently aired in Congress, might be interpreted as indicating the direction of our thinking and planning in Army circles. Once again, *ARMOR* emphasizes that all Americans, particularly those young



General J. Lawton Collins, Chief of Staff—Leader in the development of a tactical ground atomic weapon

men who must bear the brunt of any future fighting, welcome these indications that our Army must be technologically minded, trained and equipped.

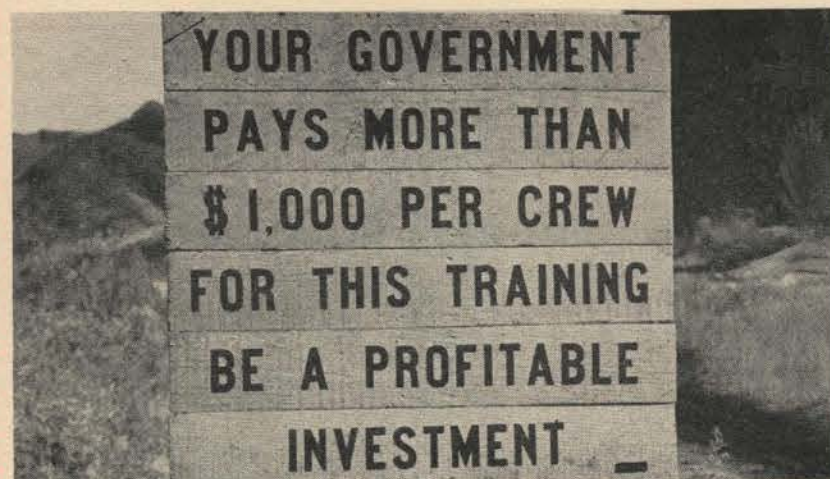
In the next (September-October) issue of *ARMOR*, the subject will be: *Military Schooling of the Army Officer*. It is believed that articles of this nature will serve you in the field suitably.

General Fry recommends that if you have any personal problem you get in touch with your Branch Career Management Section in order to obtain the authoritative answer. Likewise, he invites senior officers to write to him directly. In these days of "quasi-peace" many unusual problems do arise from time

to time. All officers are assured of a quick and considerate answer.

To further acquaint officers with the methods of operation of the Career Management Division, and to supply other information of broad interest, is a mission *ARMOR* is proud to bring to its readers through the Chief of CMD.

Any comments by *Armor* officers, or other members of the combat arms will be appreciated.



One of numerous signs used to remind the tankers that training is expensive.



The tank moves to hull defilade and prepares to fire HE at antitank position.



Moving into the hills, tankers cover suspected enemy areas with blanket fire.



The eight stations, each of which presents a different situation to the crew and must be solved.

TRAINING TANKERS IN KOREA

Training is continuous! To prove this point herewith presented is the X Corps' tank training area which is in operation in Korea. As stated by General I. D. White, X Corps Commander, "the purpose of the training area is to measure your ability to perform your duty as an individual and to work together as a crew."

Various tests are given each tank crew upon arrival in the area.

First, march tests are given upon arrival within 20 miles of the training area of a company. These tests include the warning order, march order, time of arrival at IP, alertness of tank commanders, rate of march, procedures at halt, and other matters related to the conduct of tactical marches.

Upon arrival in their bivouac area, the conduct of the personnel and appearance of the area are checked. On the four subsequent days, each platoon participates in various tests and inspections. On the first day, the platoon moves to the Matériel Test Area where individual crew members are given the Matériel Examination and communications and maintenance tests. On the second day, the platoon moves to the miniature range for sub-caliber training which is followed by instruction in the preparation of an individual tank defensive emplacement as presently employed in Korea. On the third day, the platoon travels to the crew test area where it participates in the tank crew proficiency course. This is followed by a period of instruction in artillery forward observation. On the fourth day, maintenance and technical inspections are conducted by ordnance and signal teams.

The tank crew proficiency course, which is the most important part of the entire operation, consists of a platoon problem. In this problem the platoon is required to move through a valley and establish a security outpost. The course is divided into eight stations, each of which presents a different situation which must be solved by each tank crew as they move along to their final objective. Upon arrival at the objective, the infantry patrol leader contacts the nearest tank commander, requesting tank fire to annihilate a large group of enemy. To solve this, the tank commander must utilize his attached artillery so as not to disclose his position.

There is no substitute for training!

—CAPT. ROBERT E. DRAKE



The test officer stays on rear deck as tank commander drops into the hatch.



The tank moves forward as the Bow Gunner engages an enemy Bazooka team.



Tank commander adjusts artillery fire while gunner prepares his range card.

COMPANY commanders of the 76th Tank Battalion, 11th Airborne Division, were assembled in a small room adjoining battalion headquarters. The men talked among themselves. The only light came from a glaring bulb in the ceiling. There was a feeling of tenseness in the air. Suddenly, someone shouted: "TEN-SHUN!"

The battalion commander and his staff officers strode into the room. All eyes followed the battalion commander as he walked directly to the situation map on the wall.

"At ease," he said. He then pinned an overlay on the map, turned, glanced briefly about the room and said: "Gentlemen, I have attack orders from division."

He indicated to a wall map with a pointer. "Our objective is AIREDALE. We will initially support the 511th Infantry Regiment in seizing the shoulders of Macdonald Pass." He paused. "We then pass through the 511th, clear the pass after the 511th has secured the shoulders, and move out to seize AIREDALE, some seven miles from the pass in Aggressor's rear. We organize and defend this objective until relieved by Division order. I have been advised that close air support will be available both to support the 511th's effort and our attack on AIREDALE."

To this simple yet concise statement, the battalion commander added: "While I am completing my plan of attack, the S2 will give you the general situation." The battalion commander left the room.

"United States forces have been driving westward after a successful crossing of the Colorado River and are continuing the offensive with the mission of driving Aggressor forces out of friendly territory which they have invaded for the second time," the S2 reported. "Our Army has reached a line as shown on the overlay. Its mission is to continue the drive northwestward capturing and securing the communication center at

COLONEL MAURICE E. KAISER served as G3 and Deputy Chief of Staff of the XIII Corps in Europe during World War II. Subsequently he was assigned to the Far East which included duty with the Marshall Mediation Board and Far Eastern Command Headquarters. He opened the Armored Combat Training Center at Camp Irwin, California, in May, 1951, and has held the posts of Commanding Officer and Deputy Commander since that time.

KASSERINE IN REVERSE

by

COL. MAURICE E. KAISER

All Photos U. S. Army



This battalion problem is the culmination of the six weeks' training given to the various tank battalions ordered to Camp Irwin, California. The two-day battalion exercise includes an attack, seizure, organization, and defense of an objective deep in enemy territory. In addition to air support, furnished by the Tactical Air Command, all supporting arms are played in to the exercise to lend realism in simulating battle conditions.



SEARLES, the chemical plant at TRONA and tungsten mines in the ARGUS Mountains. The area must be cleared in zone to the Sierra Nevada Range," he continued.

"Corps has seized a line extending from the Calico Mountains to the Avawatz Mountains with the 11th Airborne Division securing the Tiefort Mountains—Bicycle Lake Area. The strength of the Aggressor forces has been reduced by the severity of fighting since our forces launched their offensive. The enemy is weak in armor but has utilized what he has to the utmost, shifting it from area to area behind good defensive cover. He is strong in antitank weapons. The terrain favors the enemy in his defense.

"Reports indicate that the Aggressor Second Army has been beefed up by several divisions, all of which have seen service in this particular campaign. However, since earlier fighting was contained west of the mountain area, none of these units are acquainted with the desert country in which we are operating. Indications are that while resistance is stiff, morale is showing signs of deterioration.

"Divisional units facing our Army that have been identified are the 15th and 87th Rifle Divisions, 11th Mechanized Division, 15th Airborne Division, 10th Cavalry Division and the 5th and 17th Artillery Divisions. Latest reports from Corps Headquarters indicate that elements of the 11th Mechanized are on our division's front.

"Enemy positions to the front are reported to have been hastily organized but could contain minefields, road blocks, tactical wire, and demolitions. Our air has located and identified some of these measures as shown on the overlay."

After the S2's briefing, other details of the warning order were issued by various staff officers. At the conclusion of the session, the individual company commanders departed to make their respective ground reconnaissance of the attack area in the zone of the 511th Infantry Regiment.

Meanwhile, the battalion commander had started work on his plan of attack. This was based on a map study and aerial reconnaissance of the area prior to the issuance of the warning order. He also conferred with the commander of his attached infan-

try battalion, securing recommendations for employment in reinforcing the 76th Tank Battalion. Plans were made with the division artillery liaison officer and the attached engineer platoon commander for their proper support.

Just three hours after tank company commanders had begun their ground reconnaissance of the attack area, up to the 511th's front lines, they reported back to the battalion CO.

Attack orders were issued, thoroughly briefing each company commander on his respective part in the battalion's scheme of maneuver. This included the mission of tanks and infantry, time of attack, time of departure, direction and axis of attack, zones of action, initial formations, the objectives, prepared artillery fire plan, planned air strikes and marking of targets, plan for reorganization on the objectives, control plan, location of the aid station, and other logistical and administrative details.

After receiving the general plan of attack, tank company commanders went back to their company areas for similar briefings among platoon and tank commanders. There they worked out their respective attack plans and then reported back to battalion headquarters. When the entire plan was completed, the battalion commander reported back to division headquarters. Meanwhile his S3, together with the artillery liaison officer, went to the infantry regimental command post where he arranged for passage through the 511th's lines. He also examined the regiment's plans for continuing the attack once the 76th had cleared the pass en route to AIREDALE. The S3 also outlined the battalion fire plan to the regimental commander. Together with the artillery liaison officer, he requested that artillery and other weapons in support of the regiment be prepared to provide reinforcing fires.

When the division commander had approved the 76th Battalion's plan of attack, the stage was set for action. One factor, which must be explained at this point, enters into the picture. The 76th Tank Battalion had no reconnaissance platoon, due to shortage of equipment and personnel. Thus, the battalion trains had to provide their own protection during the

planned re-supply operations on AIREDALE after dark.

At exactly 0700 hours on October 27th, the 76th moved out of its administrative assembly area. An administrative march was made in formation YOKE, consisting of the entire battalion in a column of companies. The attached infantry followed in trucks.

As it moved into the tactical assembly area, the battalion (two companies of M47's and one of M46's) went into a perimeter formation so positioned that the leading companies could move out first into attack position. Charlie and Baker companies were to be the attacking units, with Able Company (M46's) in support.

Then the battalion commander made a personal inspection of the tactical area. The Battalion CP was established in a central position as was an OP from which a good field of view of the 511th's zone and Macdonald Pass was obtainable. After all was in readiness, the battalion commander then went directly to the CP of the 511th Infantry Regiment. There he checked on any changes in the attack plan as approved by the division commander after coordination with the 511th's CO. He learned that the 511th's front lines had been pushed back about 200 yards by strong Aggressor action and that the sector to be attacked had to be assaulted immediately.

He rejoined his company commanders and staff, orienting them on the last minute changes in the situation. At the end of the briefing, he issued the order to move out, pointing out on the ground the routes and axis he wished the companies to use, key terrain features and possible enemy strong point. He further directed that the leading companies would cross the designated ID at 0900.

After receiving these orders, company commanders hurriedly returned to their units in the assembly area, assembled platoon leaders and tank commanders and issued their own last minute instructions.

Charlie Company moved out to the left, with two platoons forward, echeloned to the left, and one back. Baker Company took position on line with Charlie, to the right, with the same platoon formations except that leading platoons were echeloned right. Able Company followed about

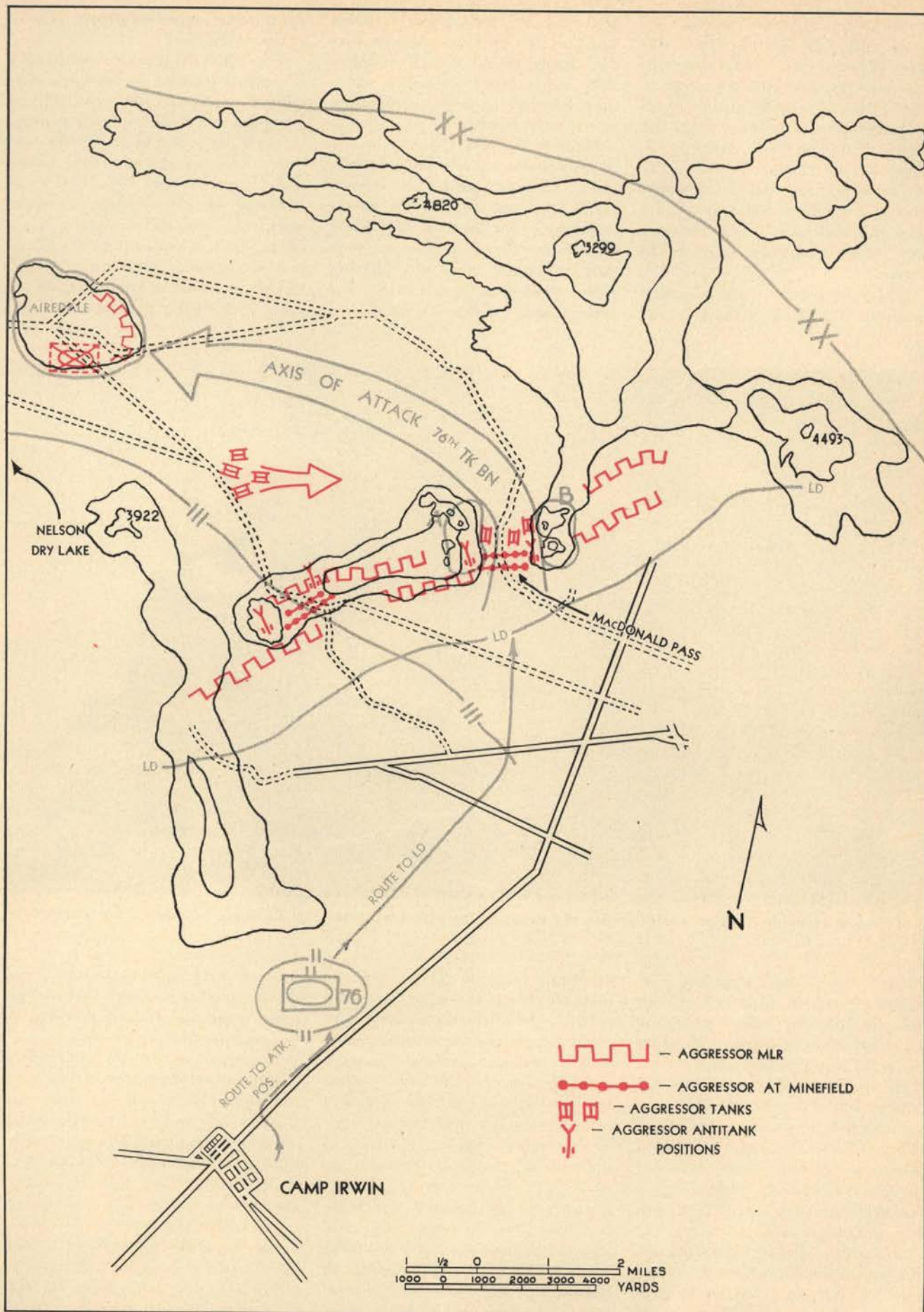
1500 yards to the rear in company wedge.

The terrain toward Macdonald Pass, though open, was filled with gullies and boulders which afforded a variety of cover for a tactical movement. The pass itself was about 2000 yards wide. A wide, boulder-filled gully extended at a right angle, making the terrain inaccessible to either friendly or enemy tanks. In the middle of the pass were impassable rocks in which it was assumed there were enemy antitank weapons and infantry. To the right and left of these rocks, aerial reconnaissance had revealed enemy tanks and infantry positions. The pass was surrounded by high peaks which might conceal enemy antitank gun positions and certainly infantry.

However, it must be brought out that despite the difficulties of terrain and its defendability, the enemy was nearly 50 per cent understrength in men and vehicles. But they were well-disciplined, battle-tested and had the ability to reorganize quickly after reverses. In the past, it had been found that enemy subordinate unit commanders often attacked even when their positions were about to be overrun.

Just as the battalion jumped off, the 89th Field Artillery Battalion, 11th Airborne Division, began laying down a concentration of 105mm fire on the shoulders of the pass. One platoon of 4.2-inch mortars began to lob shells on the pass, hitting targets in the mouth and on the shoulders. As the advance progressed, the 105's also hit the reverse slopes of the shoulders. These concentrations lasted about five minutes and were shifted so as to smother the area.

As the 76th, with three companies of supporting infantry, moved forward, it encountered enemy infantry several hundred yards from the pass. When the forward elements of the battalion were within 4000 yards of Macdonald Pass, the Tactical Air Control Party informed the battalion commander that the air strike which had been requested earlier by the 511th Infantry, had arrived. Tanks fired white phosphorus to indicate the strike objective in the pass to be hit with napalm and rockets. Artillery smoke shells were used to mark objectives on the shoulders for the strike.



As the air strike came in, the battalion shifted its fires to enemy positions, flanking the strike objective and providing continuing support to the 511th. Charlie Company, with two companies of infantry from the Second Battalion, 188th Airborne Infantry Regiment, took targets on the left front portion. Baker Company, with one infantry company of the same unit, took on targets to the right front. Able Company remained in reserve.

When the battalion had advanced to within 2000 yards of the pass, the

two paths in the minefield, Baker Company set up a base of protective fire. Baker then breached its minefield and plunged through to clean up the last of the defensive positions on the right front.

Once in the pass, Charlie Company took under fire four enemy tanks, seven antitank guns, and enemy troops, the last remnants of enemy resistance. One platoon of Charlie Company took up a blocking position, while the other two platoons passed through to the left flank. The latter platoon's advances were covered

its ultimate mission—seizure of objective AIREDALE.

The 76th's commander immediately pushed forward in his tank. By radio he ordered Charlie and Baker Company to waste no time getting through the pass and to regroup "on the move." Meanwhile, Able Company began moving up.

Ahead of the leading elements stretched a long valley, sloping away to the west. Dominating the valley, and seven miles away, stood AIREDALE, a rounded knoll, 3000-4000 yards wide, rising 200 feet above the



F-51 planes, carrying napalm bombs, lend a big assist to the attacking armor by knocking out an enemy stronghold.

air strike lifted. Both attacking companies stepped up the tempo of their drive, pushing back and overrunning scattered enemy infantry and engaging tanks and antitank weapons.

On the most likely avenue of approach into the pass, the battalion encountered a defensive minefield. While Charlie Company set up a base of fire, one platoon of tanks and engineers moved up and breached this field, marking a path 200 yards deep in two places.

Meanwhile, Baker Company had run into a similar situation on the right. As Charlie Company with its attached infantry moved through the

by terrain features. Baker Company executed almost the same movement on the right. Infantry working with tanks mopped up the existing enemy defensive positions and took prisoners.

As the attack companies pushed through the pass, the 511th's infantry won the shoulders with the assistance of the tanks. The lead elements of the tank battalion moved toward the north side of the pass to regroup. Meanwhile, the battalion liaison officer who had been at the 511th's CP reported to his battalion commander with orders releasing the battalion from further support of the regiment. It was therefore able to continue on

valley floor. Even at this distance, the desert air was so clear that enemy tanks could be seen in position on the high ground.

An examination of the intervening terrain revealed, to the naked eye, comparatively smooth, open ground. But through field glasses you could see numerous defiles and gullies traversing the battalion's axis of advance. A deep gully to the right denied the enemy observation of any attacking force in that position.

As the tanks emerged from the pass, Charlie Company again took position to the left, Baker on the right. The attached infantry dropped

back to be picked up by their armored personnel carriers coming up with Able Company. Their orders were to remain on the battalion axis to AIREDALE following the support company until called forward for the attack on AIREDALE itself.

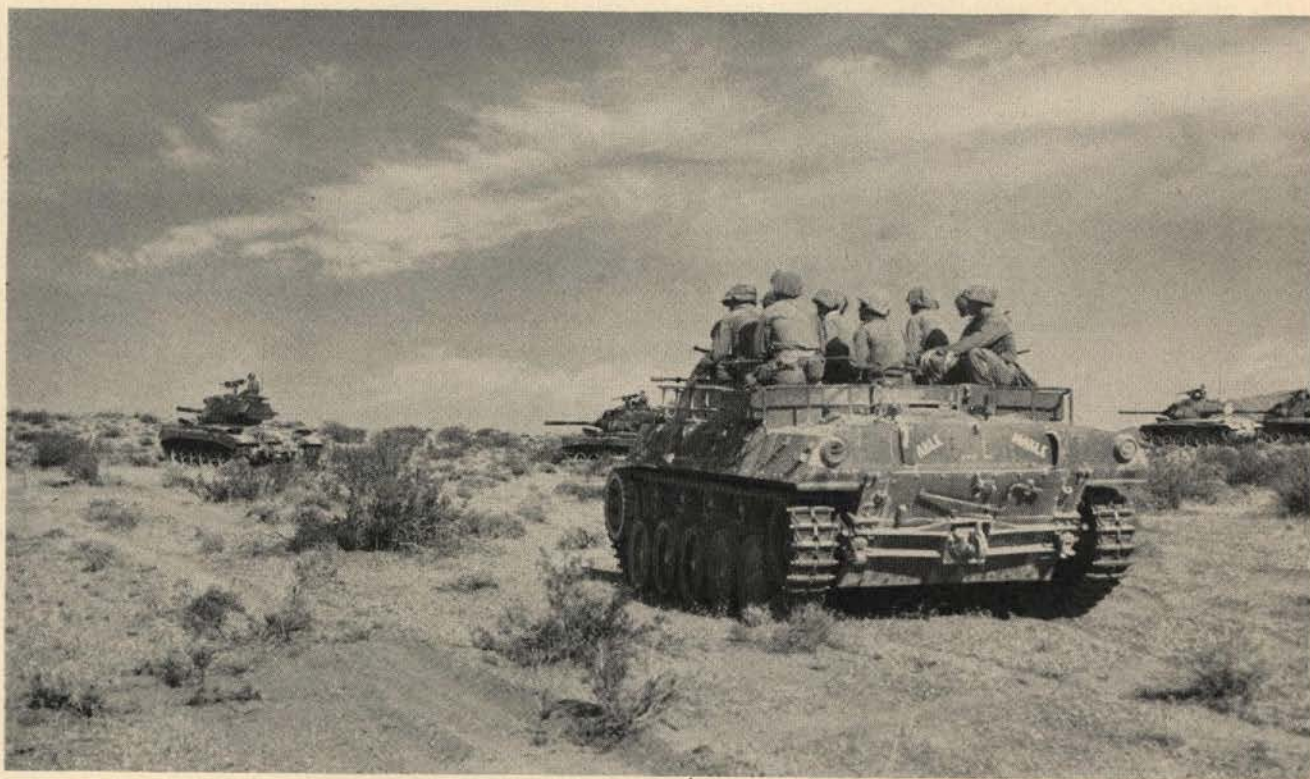
When the leading platoons of Charlie Company were about 1000 yards west of the pass, on the south flank, an L-19 aircraft attached to the battalion from division observed a formation of enemy armor approximately 5000 yards southwest from the pass moving toward Charlie Com-

pany. Charlie continued to advance and engaged the enemy tanks at 2000 yards, immediately knocking out several of them with first round hits. However, the 76th commander immediately realized that Charlie Company soon would be too busy for the moment to continue the swift forward thrust he desired to capture AIREDALE. He then committed his reserve company on the left of the battalion axis. Charlie Company was directed to move in rear of Able Company, once it had eliminated the enemy with which it was engaged.

ion CO since this company was not visible to him.

Able met little or no resistance, only occasional artillery or mortar fire, since our own supporting guns had all but neutralized the enemy's indirect fire. Baker Company, however, was receiving considerable tank and antitank gunfire from well concealed positions on AIREDALE, in addition to encountering scattered tank-killer teams. Baker's steadily hampered advance was slow.

As Able Company closed on AIREDALE, enemy tanks were spotted and



An M-39 personnel carrier, carrying infantry troops, follows behind the attacking M-47's to give additional support.

pany. Quickly the pilot reported this to Charlie Company's CO who in turn relayed it to the battalion commander. Charlie was ordered to swing to the southwest and attack this enemy force, if need be with the entire company.

The company then moved toward the enemy in wedge, despite a heavy concentration of enemy artillery and mortar fire, evidently called in by the enemy on AIREDALE. Friendly artillery, which had moved up, was called for, and immediately began counterbattery fires on AIREDALE. This noticeably lessened the enemy's fire and its effect.

Able moved through Macdonald Pass, using the route Charlie had used. It proceeded directly ahead, taking up the rapid advance needed, and on line with Baker Company, which had had to make a wide wheeling movement to the west as it debouched from the pass.

As the attack advanced to within 5000 yards of AIREDALE, the battalion CO ordered Baker to make a wide enveloping sweep to the right. This placed it in the gully, with Able on his left flank and the steep, impassable Granite Mountains on his right. The L-19 pilot constantly reported Baker's progress to the battal-

ion CO since this company was not visible to him. Meanwhile, Charlie Company, having knocked out all enemy forces it had engaged on coming out of Macdonald Pass, had moved up in rear of Able. The battalion commander now ordered Charlie to swing to the left in defilade around Able. With Able as a base of fire in the center, this pincers made a double envelopment of AIREDALE, with Baker on the right.

When the battalion commander observed that the two pincers had reached a point 2000 yards from AIREDALE, he called for an air strike. He described the specific targets on AIREDALE and marked the

area with HE and smoke to identify it to the incoming fighter-bombers.

As the air strike progressed, the entire battalion continued to work up to AIREDALE. Baker Company had the advantage of being in complete defilade position, not under the enemy's observation.

The air strike ended when the tank battalion was within 1500 yards of AIREDALE. Tanks firing their 90mm's, .50 and .30 caliber machine guns roared forward in a mass assault, while division artillery pounded AIREDALE and its reverse slopes. This withering fire, plus the effect of the air strike, all but eliminated enemy resistance. When the battalion advance was within 700 yards of the objective, the infantry dismounted from personnel carriers and took positions with Able and Charlie Companies. In mass, the battalion assaulted AIREDALE as friendly artillery lifted.

Baker Company advanced to the northwest, cutting off any chance of enemy escape. Able, no longer able to fire, moved rapidly through the objective and organized the far side for defensive measures. Charlie hit the southwest, clearing and organizing that portion and tying in with Able.

After cutting off the enemy's escape, Baker came around the back of the crest, organizing its sector on

the right with one platoon, the other two being used for mobile support.

Once AIREDALE was secured, the battalion commander reported by radio to division headquarters. He then made a personal inspection of defensive positions, called in his company commanders to give them additional instructions, and ordered reconnaissance patrols forward to make a limited pursuit. These patrols consisted of a squad of infantry and a section of tanks. Their mission was to locate the enemy, his route of march, possible attack positions, and to capture prisoners.

Individual tanks were instructed to take up normal battalion defensive measures with infantry in front. Both the infantry and tanks were told to select the best fields of fire and check security for the night. When the recon parties had returned, tanks on the northern sector of the objective were instructed to make out their range cards and check fire them for all weapons.

Meanwhile, leaders were dispatched through the MSR, opened by the 511th Infantry along the battalion's axis of advance, to bring up the battalion CP group and supply trains.

During the entire attack, friendly infantry continued to fight forward in the high ground north and south of the battalion's axis. As evening drew near, elements of this force were

occupying positions a thousand yards to the rear and to the right and left of AIREDALE.

Shortly after nightfall, as the field trains were moving up, Aggressor stragglers attacked the trains with small arms fire and attempted to infiltrate the battalion area. They were beaten off, however, and the trains came through.

While the battalion was being resupplied in sections, Major Dundas, the battalion CO, issued his orders for defense against counterattack. Plan RED, for a frontal attack, called for Able to hold with Baker moving on Charlie's flank (southwest of perimeter) and take position on Able's left flank to fire on the enemy.

Plan BLUE, for a frontal attack, called for Able to hold and Baker to move two platoons to the right to take up a cross-fire position. Plan WHITE, for a right attack, had Baker hold with Able moving two platoons to the right to take up a cross-fire position. Plan GREEN, for a left attack, had Charlie holding with Able moving two platoons left to Charlie's right flank.

Shortly after these instructions were given, an enemy attack comprised of a platoon of tanks and two platoons of infantry hit from the northwest. Able company repulsed it after a ten-minute fire fight. No further enemy action occurred during the night except die-hard individual Aggressors continuing to infiltrate the battalion area, trying to blow up tanks and kill individual unwary soldiers.

In the morning at first light, the enemy struck again in force. They consisted of two companies of enemy tank-supported infantry. Counterattack plan RED was used. Charlie Company met and engaged the enemy. Baker committed one platoon in a single envelopment on Charlie's left flank. The attack was repulsed as quickly as it began.

This last action marked the end of the battalion problem at the Armored Combat Training Center, Camp Irwin, California.

The foregoing problem constitutes the climax of the 6-8-week battalion training program at the ACTC. It is carried through from beginning to end under conditions as near to combat as the Army can make them. From the time the battalion commander gets his orders from division head-



Battalion commander returns from a survey of the front in an L-19 light plane.

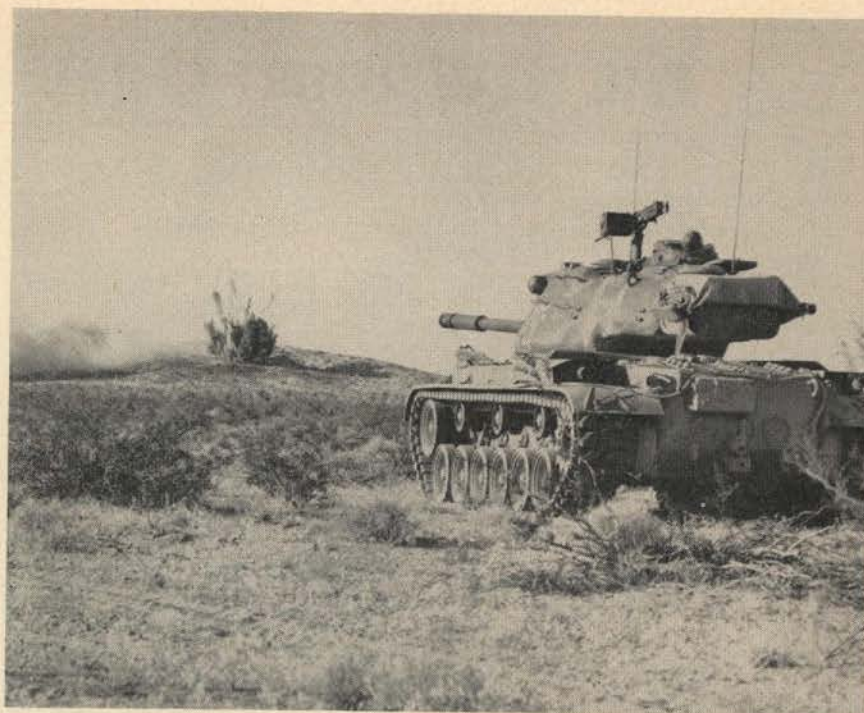
quarters, which in this case is actually Headquarters, ACTC, he works independently of all training personnel. His actions, and those of his officers and men, are judged by a team of umpires from the resident 325th Tank Battalion—who know how and when to look for mistakes. At the completion of the problem, a critique is held, and the functioning of the battalion from tank crews upward reviewed.

The problem actually begins with an orientation by ACTC personnel which takes the form of a division staff officer briefing the tank battalion commander and staff for a combat mission. During the session, the general and special situations are given, followed by a discussion of the mission, intelligence, administrative procedures, umpire system, and air and artillery support. Then the operation order is issued. From then on, the battalion commander carries the ball—operating on his own SOP's.

Every detail for the mission must be worked out by the battalion commander, just as if he were in combat. In the actual conduct of the problem, ACTC personnel acted as the regimental staff of the 511th Infantry Regiment. Aggressor attacks were simulated. Since 105mm and 4.2-inch mortar ammunition is critical, TNT charges simulated such support. Enemy fire was simulated with "flash simulators" placed in old hulks. This was the only simulation of firing; all other was with service ammo, including the air strikes. Every minute detail of the problem is worked out to create conditions as near to combat as possible. These factors contribute considerably to the training value of the problem and have been given high praise by officers and men who have taken part in its execution.

Whereas the foregoing was the solution to the problem as conducted by the 76th Tank Battalion, it simply illustrates how one particular tank battalion conducted the problem. Situations may vary from time to time and in no manner follow the sequence of events as described in this story.

The Armored Combat Training Center was opened by the Army in the Spring of 1951. The idea behind the training program is to thoroughly train tankmen to perform their primary mission: to fire and maneuver. This is accomplished at crew, pla-



The tank crew observes the results of TAC air support prior to advancing.

toon, company and battalion level, using the very latest armored equipment, modern combat tactics and techniques, and the experience of combat-wise personnel, including veterans of Korean fighting.

The emphasis in training is on the crew and platoon, for it is considered that well trained crews and platoons, coupled with adequate communications, advance planning and aggressive leadership, form the keynote to successful armored action. Training is limited to organic units.

Throughout the entire program, the tank-infantry concept is carried through, utilizing infantry available. The "three companies" of infantry used to support the 76th Tank Battalion in the problem were actually eight officers and 75 enlisted men from the 11th Airborne Division who were at ACTC for infantry-tank training.

The actual organization and establishment of the Armored Combat Training Center was accomplished by the Office, Chief of Army Field Forces, Fort Monroe, Virginia, and the Department of the Army. Training, prescribed by General John R. Hodge, Chief of Army Field Forces, provided tankers with the only opportunity they will get to fire and maneuver the Army's new tanks on an unrestricted firing range and maneuvering area.

Camp Irwin recently was recommended for designation as a permanent installation. This move was an integral phase of General Hodge's armor training requirements and policies. It also fits well into the Army's plans for training all armored units at least once a year at ACTC to keep them in a state of combat readiness.

In a speech before an Armored School graduating class last June, General Hodge struck the keynote which defines all armor training. Speaking of the task which confronts the Army, he said: "We must have, in being, the military power to prevent disaster in the event of an aggressive attack, have in hand the immediate capability of quick and strong retaliation and a base upon which to build an overwhelming force, in conjunction with our allies, to take up the offensive and overpower the aggressor. . . . Our regular establishment must be the most efficient fighting force in the world—well trained and countering in technical know-how and proficient use of modern weapons, the manpower superiority of our enemies, present and potential."

The battalion problem and all training at The Armored Combat Training Center, Camp Irwin, California, contributes its part to the successful accomplishment of this all-important mission.

THE NEW JOINT CHIEFS OF STAFF

During the hot summer months while most people are thinking about taking a vacation, four of our top-notch senior commanders are readying themselves for assuming the positions of the Joint Chiefs of Staff. Shown herein are the ones selected by the President to replace the outgoing team composed of Generals Bradley, Collins, Vandenberg, and Admiral Fechteler. Much speculation concerning the reorganization plan has been published. This was put into operation by President Eisenhower in an Executive Order which became effective on 1 July 1953. The complete impact of this plan cannot be determined at this time. *ARMOR* is endeavoring to obtain the authentic story and will publish it at an early date.

CHAIRMAN



U. S. Navy

Admiral Arthur William Radford, 57-year-old Commander-in-Chief of the Pacific Fleet, will replace General Omar N. Bradley as Chairman of the Joint Chiefs of Staff. A graduate of the Naval Academy, class of 1916, he had four years of sea duty, then was assigned to Pensacola, studied flying, and has been a leading exponent of Naval Air recognition ever since. During World War II, he directed the Navy's Air operations in Washington; later he commanded two fast carrier groups in the Pacific, serving under Admirals Halsey and Spruance. For this latter service he received two Distinguished Service Medals. Admiral Radford was selected upon the personal recommendation of Secretary of Defense Wilson.

ARMY



U.S. Army

General Matthew Bunker Ridgway, 58 years old, Supreme Allied Commander, Europe, will replace General Collins as Army Chief of Staff. Graduating from West Point in 1917, he was commissioned in the Infantry. During World War II he distinguished himself with the 82d Airborne Division; later commanded the XVIII Airborne Corps. Subsequently he commanded the Eighth Army in Korea, then succeeded General MacArthur in Tokyo, and finally replaced General Eisenhower, as SHAPE Commander.

NAVY



U. S. Navy

Admiral Robert Bostwick Carney, 58 years old, Commander in Chief, Allied Forces, Southern Europe, replaces Admiral W. M. Fechteler as Chief of Naval Operations. A classmate of Admiral Radford at the Naval Academy, he was cited as a destroyer officer in World War I. During World War II, he was decorated twice while commanding a cruiser in the Solomons. Later he became Chief of Staff to Admiral Halsey. In 1951 General Eisenhower named him as Southern European Forces Commander at Naples, Italy.

AIR FORCE



U.S. Air Force

General Nathan Farragut Twining, 55 year old, Vice Chief of Staff of the U. S. Air Force, replaces General Hoyt S. Vandenberg as Chief of Staff of the Air Force. He graduated from West Point in 1918 and was commissioned in the Infantry. Transferring to the Air Force in the 1920's, he was Wartime Commander of the 13th and 20th Air Forces in the Pacific and the 15th Air Force in Europe. Subsequently he headed up the Air Matériel and Alaska Commands prior to his assignment as Vice Chief of Staff of the Air Force.

Pros and cons of military history will be debated forever, but the necessity for study by those in the military art can never be disputed. Herein a wartime commander and historian speaks out on its value. This article will preface a forthcoming revision to the "Guide to the Study and Writing of American Military History."

MILITARY HISTORY

by **BRIGADIER GENERAL PAUL M. ROBINETT**

History in Military Education

THE value of history in military education has always been recognized in the United States Army as in most armies. It has been at the very base of instruction in service schools since their inception. In this, the American Army has followed the advice of such great captains as Frederick the Great and Napoleon who have stressed the value of history in military instruction. One statement bearing upon the question, made by Napoleon, shows clearly the importance he attached to history: "... the knowledge of the higher arts of war is not acquired except by experience and the study of history of wars and the battles of great captains."¹ Marshal Wavell, on the other hand, holds that the study of psychology and leadership is of greater importance to a military man than the study of operations, contending that Napoleon's military success can be attributed to his knowledge of psychology rather than to his study of rules and strategy.² But Le Bon, who was not a military man, has condemned histories on general principle, observing that "they are fanciful accounts of ill-observed facts accompanied by explanations the result of reflection" and that the writing "of

such books is a most absolute waste of time."³ In spite of Wavell's preference for biographical works and books of fiction and Le Bon's aversion to history, which is not without value as a challenge to historians, it must be concluded that the study of past wars is fundamental to preparation for the next.

Every individual in the military service, from the basic private to the Chief of Staff of the Army, will find a knowledge of military history and especially of American military history valuable in the solution of problems, both in peace and in war. This is true because current military problems cannot be solved without an understanding of the past in which they are rooted or, as carved in stone at the entrance to the National Archives, "What is past is prologue." In other words, we must be rooted in the past to understand the present that we may project ourselves into the future.

Military History in the Development of Esprit de Corps

A knowledge of military history can play a vital role in the development of *esprit de corps* in the Army. But as Fortescue, the eminent British military historian, has said, "without knowledge of military history men are really unconscious of the existence of that most wonderful of moral forces . . . and it is not a thing of which anyone can afford to be ig-

norant."⁴ In line with Fortescue's warning the United States Army has called upon military history in many ways.⁵ In the Education and Information program, the soldiers are informed of past heroic deeds and accomplishments of individuals and units and are furnished *The Soldier's Guide*, containing historical material. Army posts are generally named for widely known military men; buildings and streets for others or for military organizations. Colors and standards are decorated with streamers carrying the names of battles or campaigns in which the unit has honorably participated. For many years *Retreat* has included the strains of music inspired under the "rockets' red glare." In many units mounts and vehicles have borne the names of distinguished soldiers of the past. These things can be turned to advantage by those who will take the trouble to weld the deeds and records of the past to the task in hand. If successfully accomplished the Army-in-being comes to live and function in the best traditions of the past.

Military History and Mutual Respect in the Armed Forces

A comprehensive knowledge of military history will facilitate mutual respect and understanding in the armed forces; the broad problems of the higher commanders will be more readily comprehended by subordinates; and the complex human, ma-

BRIGADIER GENERAL PAUL M. ROBINETT, a frequent contributor to *ARMOR*, is presently Chief of the Foreign Studies Branch, Office of the Chief of Military History, U. S. Army.

terial, and physical problems of the soldier and of the small-unit commanders better appreciated by superiors.

Military History and Leadership

Military history and the biographies and memoirs of military men of all ranks constitute the best source material for the study of military leadership. Even though there is a paucity of good biographies and memoirs, particularly in the lower echelons, this material is the best available for an understanding of character, of the characteristics of men, of good and bad leadership, and of the influence of eminent personalities upon events. The studies dealing with the fighting men should be read with the realization that bad soldiers tend to leave many documents behind them, while good soldiers leave only the briefest sort of records or merely a name. For this reason even so-called "factual studies" of the fighting men are usually heavily loaded on the seamy side of life. If the study is to be profitable, the student must analyze, evaluate, and judge the qualities of both fighting men and leaders, with due regard to the circumstances and conditions under which they worked. But as Wilkinson has said, "This judgment must never degenerate into mere negative criticism. . . ." It should enable the thoughtful student to determine and to identify in others the desirable traits of soldiers or of leaders in both staff and command positions. This study should enable a military man to become a practical psychologist, but should not lead him to become pedantic or academic. As Clausewitz has pointed out, a commander "need not be a close observer of men, a sharp dissector of human character, but he must know the character, the feelings, the habits, the peculiar faults and inclinations of those whom he is to command."⁷

To be of maximum value in teaching military leadership, history must be factual and frank. Histories written during the lives of the actors or too near their era are generally tinged with partisanship, colored by self-interested flattery, and influenced by the selective treatment of source material. Histories written too long after the time of the participants are frequently fictional or sentimental. Neither type of history is satisfactory

for teaching leadership. History cannot, therefore, serve as an entirely satisfactory basis for instruction in leadership until it is written in such a manner that it portrays the participants, their merits and deficiencies, their temperaments, doubts, and ambitions, their Janus faces, their tensions and contrasts, and their physical and mental conditions.⁸ When it becomes possible to write of public men as one would write of property, the greatest value to be derived from military history probably will be its influence on the development, training, and selection of honorable, skilled military leaders. Such writing cannot be done in official histories written contemporaneously with events. It is an appropriate field for the independent historian who writes after passions and partisanship have been stilled by time.

Military History in Instruction and Training

Military history is the very foundation of our knowledge of tactics and strategy. It is also the foundation on which the theoretical and practical training of troops and the development of training directives is based. It gives life to the bare bones of facts and regulations. An instructor who is not grounded in military history appropriate to the level of his instruction is dry and pedantic and will accomplish no great results. On the other hand, one who not only knows the principles but who also can illustrate them by historical examples, giving facts concerning troops, commanders, weapons, supply, communications, terrain, and weather, can give life to his instruction and make it useful. This is just as true in troop training as in formal instruction in military schools. Above all else, however, military history gives an interesting and deep insight into the minds and hearts of military men, into tactical and strategical methods, procedures, and principles, and into the relation between war, politics, economy, philosophy, geography, and the mentality of nations and races.⁹

If military history is to serve as a basis of instruction and training it must be factual and objective. Propagandistic history or censored history is extremely dangerous and should not be used as the basis of instruction in military schools or in training. Such

history is not history at all. It can provide no sound lessons or basis of intellectual and professional training. It leads to false conclusions. And it fosters one of the worst evils in professional military thinking—self-deception.

If military history is to be of greatest value in instruction and training it must be more than a logical, factual record or account of events. After the facts have been synthesized into an effective record there is a final step in the project—the analysis of the facts and the formulation of conclusions based on that analysis. This last step can be taken only by one who is both well-grounded in historiography and professionally qualified to deal with the military organization and the operations recorded. In dealing with these subjects at the higher levels the analyst must have a knowledge of national policy, of the higher organization for war, of military geography, of strategy and grand tactics, of logistics and techniques of the combined arms, and of weapons. At the lower levels of military organization and operations the analyst must have a knowledge of troop psychology, of weapons, of terrain, of weather and climate, and of tactics, logistics, and techniques of the combined arms.

Military History and Changes in Tactics and Techniques

One of the most important lessons a military student can learn from history is the necessity of quickly recognizing the changes in tactics and techniques which are indicated during the course of a war, and especially during the meeting engagement. It is at these times that secret weapons and differences in tactics and techniques show up most clearly and require immediate adjustment to conditions on the battlefield. History teaches that commanders must react quickly to the new conditions and at the same time transmit information to higher commanders concerning the circumstances and occurrences on the battlefield which indicate a need for changes in equipment, tactics, and techniques.

The study of the initial phases of military operations deserves special attention. These are periods that mark the introduction of new weapons, new tactics, or inexperienced troops; that involve a sudden shift in type of ter-

rain, in defensive arrangements, in weather, or in seasonal conditions. It is during these periods that faulty organization, inadequate or impractical training, inefficient weapons, failure of leadership and communications, inadequate logistical support, faulty coordination of the various arms, unforeseen effect of weather and terrain, rumors, and many other factors, some almost intangible, create a state of confusion which should challenge every military student. Knowledge gained through a study of the initial phases of past operations will pay untold dividends to those who may be involved later in similar situations.

Learning from Experience and the Experience of Others

A military student should not allow personal experience on the battlefield to limit his point of view but should add to it the experiences of others.¹⁰ Conclusions and principles, based on a single, personal experience or an inadequate preparation in military history, are very dangerous. Ardant du Picq, a profound student of combat, has expressed the matter in another way. In a questionnaire submitted to contemporaries he said, "Whoever has seen, turns to a method based on his knowledge, his personal experience as a soldier. But experience is long and life is short. The experiences of each cannot therefore be completed except by those of others."¹¹ In short, a careful study of objective military history with an open mind and with the determination of learning from the experiences of others will be of great benefit to any military student.

The principles of strategy have been evolved from an analytical study of many wars. They are, therefore, based on a great many experiences of the past and are immutable. "Consequently, the Army extends its analytical interest to the dust-buried accounts of wars long past as well as to those still reeking with the scent of battle"¹² with the object of the search dictating the field for its pursuit.

In the field of tactics and techniques, doctrine based on personal experience or the experience of others is apt to lead to error, for, as General MacArthur has said, "In every age these [tactics] are decisively influenced by the characteristics of

weapons currently available and by the means at hand for maneuvering, supplying, and controlling combat forces."¹³ Leadership, organization, communications, training, morale, terrain, weather and climate conditions, and the enemy will also differ as well as many other things. Peacetime tactical doctrine, therefore, can be determined only by a process of reasoning, by studying experiences of others in the most recent wars, and by experimentation. When doctrine has been subjected to test in actual battle it should be quickly readjusted to conform to reality and kept in step with conditions during the entire course of operations.

Military History and Learning from the Vanquished

Upon the conclusion of a war the victors decide how they should organize and equip for the future. They base their conclusions on their own experience, which, no matter how great, is limited. It might be said that the victors reorganize on the basis of considerable self-esteem, attributing their success to better organization, equipment, training and leadership, while the vanquished reorganize on the basis of considerable humility, analyzing events and determining and eliminating weaknesses, with the intention of defeating the recent enemy. Military progress is therefore slow among the victors because conceit and complacency too often have the upper hand. The vanquished, however, looking further ahead, build new organization and new equipment. This lesson should be carefully heeded by the United States: having won all the wars in which it has engaged it is in a certain degree of danger because history reveals that military victory has frequently contained the seeds of weakness, deficiencies in coordination, training, discipline and leadership, inefficiencies in organization and logistical arrangements, inadequacies of intelligence, and shortcomings of equipment and supply.

The most convincing lessons can be learned from defeats. But it is infinitely best to learn from the defeats of others. It is, therefore, advantageous to study and analyze the records of the vanquished. The student of military history should give careful consideration to the writings of the leaders of defeated nations who have

been allowed to express themselves unhampered by censorship. Frequently, much more can be learned from them than from the leaders of victorious nations, who are apt to pass over the unfavorable matters and leave the impression that few mistakes were made. The veil of censorship usually continues in victorious nations where the proprieties are at least insisted upon and military regulations and discipline are at hand to enforce them.

Military History in Preparation for the Higher Direction of Military Affairs

The American Revolution was but the prelude to the era of peoples' wars, the wild and desperate struggles that have grown in intensity and destructiveness down to the present time. As Marshal Foch has said: "... they were to set themselves the goal, not a dynastic interest, not of the conquest or possession of a province, but the defense or the propagation of philosophical ideas in the first place, next of principles of independence, of unity, of immaterial advantages of various kinds. Lastly they staked upon the issue the interests and fortune of every individual private. Hence the rising of passions, that is, elements of force, hitherto in the main unused."¹⁴

In the United States, the direction of the armed forces is vested in the civilian Chief of State or President, and the policy matters in the Congress. The Executive and the Congress are elected to office and have rarely been trained or soundly experienced in military affairs. The President must of necessity coordinate the vast executive agencies of the government in both peace and war. He must understand the various agencies, the contributions they can make to the national security, as well as their requirements. He must also be capable of convincing the policy-making body or Congress of the necessity for these requirements. At the same time he must be capable of decentralizing the execution of tasks to subordinates.

As General Maurice has pointed out, much of the difficulty in the relations between statesman and soldier has arisen in the past because of a misconception of what is meant by the conduct of war.¹⁵ Too many mili-

tary men have thought of it as the direction of the armed forces in actual operations. Today, however, it implies the direction of the entire power and resources of the nation in pursuit of national objectives and their coordination with those of allies. This is certainly beyond the responsibility of the highest ranking military commanders even though they are intimately concerned in them because of their bearing upon the preparation and organization of the nation for war. On the civilian side the statesmen are generally even less prepared for their role in a national emergency because the civilian educational system has long ignored the study of war but has left it almost completely to the initiative of those who aspire to high government positions.

The soundest preparation for an understanding of the delicate relationship of statesman and soldier and of their mutual problems in the conduct of military affairs in peace and war can be made by studying history—particularly American history of the periods preceding, during, and following national emergencies. Unfortunately, future statesmen are rarely sure of their place in sufficient time to make the necessary preparation, and the problems of war are rarely taught in civilian colleges or universities even though the methods of dealing with war should be understood by all intelligent men and women of America. Personnel of the armed forces are in much better position to foresee their future roles in war than these unknown ones who will some day be their superiors. They should, therefore, conscientiously prepare themselves for the supporting roles of advisers to the paramount civilian

authorities and of instructors to the American people. Both roles will require great moral courage if the public interests are to be best served. An improperly prepared individual or a base flatterer may rise to the position of chief adviser on the basis of personality and lead his superiors and the country to ruin. The bloody pages of history are replete with examples of this kind.

Today, every element of national strength—ideological, spiritual, psychological, political, financial, economic, technological, and military—are involved in war and in the preparation for war. Even worse, imperialistic communism has made conflict a continuing and continuous activity among the people in every land in the world. The very name *war* has become too restrictive. *Universal conflict* better describes the relations of man to man, of people to people, and of state to state in the shrunken world of the twentieth century.

Now, less than ever before, can responsible military leaders ignore the broad fields of knowledge involved in this modern concept of *universal conflict*. Accordingly, military leaders who are responsible for advice on strategy must be versed in the broader aspects of all of these matters and must bring to their task a balanced judgment capable of giving to each the correct value it deserves in solving the great problems that arise in this rapidly changing world.

Above everything else, however, American military leaders must have a knowledge of their own land and its people and of its military history. Without this fundamental knowledge decisions will sooner or later transcend the practical and realistic. This

could only result in a national catastrophe.

Military History in the Education of the American People

The military student can render an important service to the United States by making clear to the people and their representatives in Congress the bases, causes, and characteristics of war, the principles underlying the conduct of alliances, the coordination of domestic, foreign, and military policy, and the conditions governing the conduct of operations and the men who fight them. In doing so, as Burchardt has pointed out, the history of our country, threatened with the same pitfalls that have engulfed other nations in the past, should be considered in parallel with that of others and in relation to world history and its laws—a part of a greater whole.¹⁶ This will require not only an understanding of the histories of existing nations but of those, once powerful, but now gone forever. The importance of the subject and the profound lack of understanding of war by the people and their representatives, not entirely attributable to indifference, should spur the patriotic military man to undertake the unpopular and unprofitable role of instructor to the masses and to their political leaders.

The role of instructor to the people is, however, a difficult and thankless one. Many of the thinkers who attempted it have lacked objectivity and in their zeal have adopted propagandistic techniques. But even the best have been accused of warmongering by their opponents when in fact the latter were planting the seeds of war.

¹Napoleon, *Mémoires écrits à Sainte-Hélène*, ed. Gaspard Gourmand (London, 1823), II, p. 51.

²Field Marshal Earl Wavell, *The Good Soldier* (London, 1948), pp. 20-21.

³Le Bon, *The Crowd* (London, 1921), p. 54.

⁴J. W. Fortescue, *A Military History* (Cambridge, 1914), p. 39.

⁵DA Cir 100, "Military History Indocination Plan," 1952.

⁶Spencer Wilkinson, *The Brain of the Army* (Westminster, 1895), pp. 164-67.

⁷General Karl von Clausewitz, *On War*, trans. Col. J. J. Graham (London, 1940), I, p. 116.

⁸MS B-295 (Blumentritt), pp. 7-9. Applied Studies Br, OCMH. This study on the writing of military history was formerly written in 1946 by General der Infanterie Guenther Blumentritt, formerly chief of staff of the German Commander in Chief, West.

⁹*Ibid.*

¹⁰Friedrich von Bernhardi, *On War of Today* (London, 1912), pp. 44-46.

¹¹Ardant du Picq, *Battle Studies*, trans.

Col. John N. Greely (Harrisburg, 1947), p. 8.

¹²General Douglas MacArthur, *Annual Report of the Chief of Staff for the Fiscal Year ending June 30, 1935*, p. 72.

¹³*Ibid.*

¹⁴Ferdinand Foch, *The Principles of War*, trans. Hilaire Belloc (New York, 1920), p. 30.

¹⁵Maj. Gen. Frederick Maurice, *Governments and War* (London, 1926), pp. 112-28.

¹⁶Jacob Burchardt, *Force and Freedom* (New York, 1943), pp. 89-90.

FROM THESE PAGES

65 Years Ago

Well informed Russian officers maintain that an army possessing a large number of mounted men capable of being used as infantry has great advantages over that army that does not have them; and that any cavalry without them is unsuited for the requirements of modern warfare. While in no way neglecting the training of their cavalry, as such, they go farther, and, using the horse as a means of rapid locomotion only, deliver the trooper at the required place in the shortest time, there to cope with infantry on its own ground, with its own weapons, and in a kind of combat learned from it. After the combat the horse again comes into use to bear the trooper, if victorious, in pursuit; if defeated, to a place of safety.

The aim of the Russians is to make the cavalry feel its own independence and its ability to take care of itself under any and all circumstances. With this view they are taught to throw up temporary earthworks and to charge with the bayonet. But little value is placed on the revolver; on foot the trooper's weapon is the rifle; on horseback, the saber.

To show that all this fighting on foot and general service as infantry has not caused a deterioration in the cavalryman, I will mention one fact only, viz: that, in their drills, sections and squadrons practice in charging against one another, passing through one another's ranks. If they are not good cavalymen this manoeuvre will show it; for the good seat, quick eye, and thorough command of the horse—all requisites of good cavalry—are necessary to a completion without accident of this movement.

The Russian Regular Cavalry

1ST LT. E. A. ELLIS

50 Years Ago

As one would suspect, the cavalry is the favorite arm of the Kaiser, who is a soldier born and bred, looks and plays his part, and it was a sight of a lifetime to see him leading his cavalry corps. The first general charge was made in successive lines of brigades, after the horse batteries with the cavalry had shaken the right wing of the enemy. The first rush of about one and one half miles was over a grassy, rolling country; then came some floundering in cultivated fields and several spills into the ditch of a formidable railway embankment. Their double rank formation made the few messes worse. But the squadron leading was fine, and the successive lines of hussars, cuirassiers, dragoons and uhlans swept over these rough stretches and swooped down on the infantry, which had rallied by small units. The fine leading showed again as the squadron scattered through, coming together again like flocks of birds. The guns came next, and after a whole division of infantry and 128 guns in position had been ridden over, the Kaiser sounded halt and assembly.

Notes on the German Maneuvers

LT. FRANK R. MCCOY

25 Years Ago

The question of organization of motorized army units (Divisions or Brigades) occupies constantly the military circles of all governments.

There is no doubt that the technics will succeed within measurable space of time in creating motorized units which will be sufficiently mobile to be suitable for combat, and can, therefore, be well used for special purposes. It is unquestionable also that there will be only a small number of such units. Motorization of the whole army, even in countries with high industry, best system of roads, abundant supply of fuel and oil and money, is an utopia for many years, probably forever.

Motorized and Cavalry Divisions

COLONEL MAURIZ WIKTORIN
Austrian Army

10 Years Ago

In 1934, a remarkable treatise on mechanized warfare was published in Germany by a former Austrian Artillery General, Ritter von Eimannsberger, under the title of, "The Tank War." It made a great impression on both German and Russian military circles and, to a certain extent, considerably influenced the development of mechanized doctrine. Eimannsberger's influence, however, was more organizational than tactical. His tables of organization for panzer division no doubt played a considerable role in the final makeup of these divisions which emerged on Poland in 1939. With a few deviations, their elements bore a striking resemblance to Eimannsberger's blueprints.

He also laid the groundwork for the modern anti-tank defense, although, naturally, at that time the concept of antitank defense was purely along artillery lines. The possibility of fighting tanks with close combat weapons was not even considered. The Spanish Civil War brought the first pioneer efforts in this field.

On the other hand, the tactical views presented by Eimannsberger were unanimously rejected by the German tank experts. He failed completely to grasp the most important principle underlying the blitzkrieg tactics, which is a battle, or rather, a series of battles, on a narrow front, each one devised so that the full weight of the armor could be concentrated against a weak spot in the enemy's defense and just as quickly changed to another spot if the resistance at the original point of thrust proved to be unexpectedly strong. Fluidity and flexibility in a tactical sense, combined with the idea of encircling the enemy by means of two or more converging attacks, can be called the essence of the blitzkrieg.

Tanks in Night Combat

NICHOLAS COROTNEFF

SOMEWHERE BETWEEN YESTERDAY AND TOMORROW

by MAJOR LAMAR McFADDEN PROSSER

OVER every battle there hovers an atmosphere of uncertainty. The multitudinous complex factors of time, weather and terrain about which we can never be sure; the inevitable conflicting reports; the time lag between the action itself and the reports to the commander; all these combine to obscure the true facts. This obscurity has often been called the *Fog of War*.

But there is also obscurity in much that we do in the intervals of peace. Exaggerated newspaper reports contribute to this uncertainty; highly colored and opinionated claims prompted by branch patriotism sometimes cloud the issues; strict and vitally necessary security restrictions have the unfortunate effect of withholding the light of truth; and so, the *Fog of Peace* swirls about us and we grope towards the future in a twilight of apprehensive speculation.

Struggling to keep in contact, we guide on the opinions of the man ahead, as the soldier on patrol guides on the white tape marking the helmet in front. Now and then some blinding flare of misinterpreted half-truths bursts before us to confuse us with grotesque shadows, but at intervals a flicker of brilliant reason stabs through the murky darkness and silhouettes for a moment the dim shape of the future. And where are we now?—somewhere between yesterday and tomorrow.

The path ahead for the ground forces has been marked out by many able leaders, all of whom agree that

the trend of our developments and the strategic situation of the Free World point toward the need for developing greater mobility in the ground forces. That we may lack the degree of mobility required was strongly suggested by our former NATO Commander, General Matthew B. Ridgway. In a statement to the press in Paris, 29 September 1952, General Ridgway said, "If we are jumped tomorrow or next week, or in the coming months, we will have to fight a defensive, delaying action and use to the maximum the mobility we have on sea and in the air. We do not have a mobile land reserve. We will fight with what we have on the ground. We do not have an adequate covering force—adequate mobile reserves to back them up, nor adequate logistical support for either one. If we are assailed tomorrow we are going to have a very bad time and take some severe and punishing blows." This is a sobering thought and it has not received the consideration it deserves. Less than a decade after winning a great war with an army conceded to be the most mobile military force of all time we are warned that we now lack this essential characteristic in our defense forces. Why?

We must all concede that we are not now as strong in numbers of fighting units as we were at the end of the war. We might even go so far as to admit that the expense of maintaining mechanized forces in peacetime has forced the army to accept a smaller number of completely mobile divisions than is desirable. But the real cause of our present difficulty is the fact that postwar developments have so accelerated the pace of war and so

greatly altered our traditional concepts that we have not yet caught up organizationally. The power of contemporary weapons calls for greater dispersion on the ground, and this wider separation of units and individuals in turn demands increased mobility of the component parts of the fighting force.

Just so far, the road ahead is well defined. But as we consider means of achieving this additional mobility, the path disappears again into the *Fog of Peace*. We must sift and analyze, weigh and compare many divergent views.

The advocates of airborne warfare, for instance, tell us that the "aerial operations of possible future wars will be like nothing previously experienced." Whole armies are to be transported and maintained by air. There will be no targets invulnerable to airborne attack. Any point on the globe of sufficient strategic value can, it is said, be seized by airborne armies. We are said to be relieved from the necessity for slow, painful, expensive overland attacks. Instead, we will move directly to the assault on targets of strategic importance; flying over the defenses, we hit at the nerve centers of production and the brains of the enemy government.

Is this the trend of warfare in our times? Many recent peace developments seem to bear out the aerial theories. The accomplishment of the Berlin Airlift in which we and our allies kept a city of millions supplied with every necessity and some luxuries for a period of months would seem to show that the scope of the airborne theory is not an exaggeration. However, we must consider

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*Dissipation of strength, be it Infantry by piecemeal attack or
Armor by parcelling it out in Battalion and Company packages, is
a danger to our Defense effort. A re-examination of our past, a
look at the present, and a glimpse into the future may serve us well.*

what the result might have been if this operation had been opposed by jet interceptors, by antiaircraft units firing guided missiles, by counter-bombing of the crowded airfields, by atomic bombing of the supply bases and by an active and mobile enemy on the ground. No one who saw that bridge of planes from Frankfurt to Berlin (the Germans called it the "Air Bridge") could help but be inspired, and no one who saw it could help but doubt that it would be possible in war.

Up to the present moment, no airborne force has ever been launched into combat under conditions where we did not have nearly absolute control of the air. The airborne forces have never yet had to fight in the air before reaching their target areas. If they are incapable of doing so, it must follow that airborne operations are not practicable until the attacker controls the skies. It may be said that we could always seize temporary control of certain selected airways in order to deliver the airborne and air-transported force to its target. But there is the problem of sustaining it. How are we to supply it with food, ammunition and replacements? Any serious failure of the resupply plan of an airborne force can only mean its eventual destruction for, like a city under siege, when supplies are exhausted it can no longer fight.

Airborne organizations depend largely upon fighter aircraft for anti-tank defense and for support missions which would be handled by the artillery in a traditional ground force. It is unlikely that this much needed close air support would be possible until the enemy fighter defenses

were at least partially neutralized.

Unlike traditional infantry, the airborne trooper cannot count on the accurate fires of Corps and Army Artillery. He is not yet backed up by air-transported tanks. Once on the ground, he is no more mobile than the traditional infantry. In fact, he is less so, because he carries with him only a few jeeps and 2½-ton trucks for his towed guns.

The airborne soldier is entirely dependent upon his brothers-in-arms whose feet are firmly planted on the ground. He cannot exist indefinitely on his own.

There has been only one airborne campaign in history wherein all other branches were excluded—the German seizure of the island of Crete. In this action the German paratroopers were supported only by the *Luftwaffe*, and there was to be no link-up with other forces. They dropped, seized and held an island, after which they were supplied by the German navy. When the navy could no longer operate in the adjacent waters, the force had to be withdrawn. In spite of vastly improved airborne means, it is likely that airborne operations in the future will remain *special* operations and that they will be conducted in conjunction with overland attacks. The most striking example of this type of battle was Field Marshal Montgomery's plan to seize the crossings over the waterways of Northern Holland in depth by airborne forces and to push through with armored units to link up the resulting chain of airheads—Operation Market Garden. It was described by General Bradley as, "the most imaginative operation of the entire war." It failed because the weath-

er prevented close tactical air support and made the resupply limited and inaccurate. Though it failed, it was sound in conception because it exploited the capabilities of both airborne infantry and armor—each separately and both in combination.

Our airborne forces held in strategic reserve are an important element in our national defense owing to the speed with which they can be shifted to any threatened theater of operations. Once there, however, they must fight on the ground, and on the ground it is overland mobility that counts. This, the present airborne division does not possess.

Aside from its immobility, once committed, there is at least one other fatal weakness: the airborne division has no adequate antitank defense. General Gavin testifies to the effectiveness of tanks against an airborne force. He says, "Airborne troops are at a great disadvantage in open country fighting against armor," and again, "Armored units are particularly valuable against airborne troops." The General then mentions the new bazooka and concludes that it has made "tanks in their present form as extinct as the elephants of Goma and the heavily armored Knights of Agincourt." In justice to General Gavin, it must be noted that all these remarks were made before Korea—before the "bazooka shaped-charge" advocates had met their great disappointment. For when the new bazooka was rushed to Korea with a great enthusiastic fanfare in the press, it was found that though the size of the projectile had been increased, it was still a weapon of very close range and inaccurate. The North Korean

force of approximately 200 tanks (4 battalions) was not stopped by the new bazooka nor by rocket-equipped planes. The Red drive finally petered out through lack of replacements and was stopped by M-26 and M-46 tanks rushed from the States—proof that armor has not yet reached its Agincourt.

The combination of these two fundamental weaknesses, a lack of battle mobility and a lack of an adequate defense against armor, compels us to limit our airborne plans to objectives which can be brought within reach of ground forces in a predictable and limited space of time. If we are searching for the new mobility, we will have to seek it elsewhere, for even through the *Fog of Peace* we can see that airborne forces lack it. While they possess almost unlimited *strategic* mobility, they lack battle mobility.

But what of the traditional infantry division? Can "motorized" infantry achieve the requisite mobility to operate effectively against a well equipped enemy? For the answer to this question we must study carefully the effectiveness of the division in World War II. One startling fact becomes evident as we review the major operations of the last war: No American Division (with the exception of the troops caught at Pearl Harbor) was committed to action in any battle during which the enemy was predominant in the air. In North Africa, in Italy, in the island-hopping campaigns of the Pacific, and finally in Europe in 1944, the enemy's dwindling tactical air force was used almost exclusively in aerial battles against the invasion of the enemy's home country by our strategic bombers. We did not suffer as did the French and English armies which were decimated by the close cooperation of the *Luftwaffe* and the *Panzer* forces in 1939-40. American troops never really experienced effective air-ground resistance. This was due to several factors. A German over-emphasis on heavy bombers during the Battle of Britain resulted in insufficient fighter-bombers in the later stages of the war. Attrition during the first four years of the war linked with disrupted production began to be felt. As the Allied bombing offenses accelerated, the few fighter craft available concentrated on the defense of

cities and other strategic targets, with the result that our land campaigns met little effective resistance from the air.

We were consequently able to use organizations and tactics which were actually already obsolete and we permitted ourselves to develop some bad habits—which have been carried over into our present organizations and tactics. Had the enemy's tactical air force been brought to bear against our ground operations, a great many of our most successful moves would have proved impossible. Not just the logistical improvisations of the famous Red Ball Express but the usual, SOP type, movements of our motorized divisions would have been affected. It will, no doubt, come as a shock to some that only one in three of our wartime divisions was motorized. Still, we were free to utilize fully the excellent road net that existed and to shift divisions—even on occasions armies—with little fear of interruption from the air. This condition did not exist while the Germans had an air force. It will not exist at the beginning of World War III.

The present infantry division is not a mobile organization, yet the bulk of our army is infantry. The individual foot soldier in the infantry division is overloaded. As General S. L. A. Marshall has observed, "The soldier cannot be a fighter and a pack animal at one and the same time any more than a field piece can be a gun and a supply vehicle combined." Certainly a machine could be used to relieve him of much of his combat load. Somehow, regardless of the fact that the machines exist and that the infantry has them, "the machine has so far failed to reduce by a single pound the load a soldier is required to carry in war."

But fundamentally it is the organization itself which is the limiting factor. I am not referring to the refrigeration units, the mobile showers, the special service clubs and the like, which are dragged across continents; because these can be and are stripped away when the situation demands. What I do point to as restrictive factors are the regimental tank companies, and the tank battalion which are simply an embarrassment to the infantry division. I dare assert that even the infantry element of the division is now too large. There are too

many men in the infantry regiments and it is this bulk—this sheer overweight—which destroys its mobility.

The division began to grow to its present corpulent size in World War I, when, for the first time, armies found it necessary to tie their flanks to insurmountable continental barriers. The race to the sea and the resulting unbroken lines from the Alps to the Atlantic came about because the mobile capabilities provided by truck and train made it possible to shift great bodies of troops rapidly and thereby to flank any opposing force. To seal their flanks both the Allied and the German commanders found it necessary to extend to the limit of the geography. Bulk became necessary to fill those long trenches and, though they were generally unsuccessful, massed attacks were the order of the day.

Mechanization came about between the wars. This increased mobility still forced commanders to fill the space between geographical barriers but there was now the additional capability of penetration because the deadly machine gun and heavy artillery barrages were largely overcome by armor. The infantry division was consequently augmented by the addition of antitank units, the attachment of GHQ tank battalions and the like. After the last war the division absorbed all these units and there is now a need to reconsider the larger strategic situation to determine the usefulness of all this mass.

Atomic weapons have now reached such a point of development that a penetration is possible at any place. We cannot now hope to block a continuous front across Europe. There is little need now to establish an unbroken line, if by the use of atomic weapons that line can be penetrated at will.

What we must now strive for is controlled-dispersion. Mobility has come back into warfare and battles of the future will be battles of maneuver. We must maintain contact with the enemy because by becoming closely engaged, we make it difficult for the enemy to use his most destructive tactical weapons, without destroying his own troops. In so doing we must not become so heavily concentrated as to offer a tempting target ourselves. And all the while we must remain mobile in order to react quick-

ly to any move and to exploit our own use of the atomic weapons.

The infantry division as it is now organized is incapable of this sort of employment. The mobile capabilities of our enemy brought about the present massive division. The mass destructive contemporary weapons will bring about mobility. The pendulum swings and tactics and organizations must change to fit technological developments. Instead of continuous fronts and unbroken lines which are no longer effective, we will develop a cellular defense and even maintain dispersion in the attack. Battles will be won by the maneuvering of small task forces or combat teams, each too small to be a suitable atomic target, yet powerful enough in terms of firepower and speed to strike swift, powerful blows at the enemy's dispersed forces, or to force the enemy to concentrate so that our own mass destructive armaments can be profitably employed. Penetrations made by the use of these new weapons must be exploited quickly if we are to squeeze the fullest advantage out of the surprise and disorganization they will create. Men on foot move too slowly for such missions. Mounted on trucks, they are confined mainly to the roads, which will probably be badly torn up and partially blocked by destroyed bridges and debris caused by the new weapons' blast effect. To exploit fully the breach we have made, we must be able to move rapidly cross-country in dispersed formations while carrying with us long-range weapons capable of covering the intervening spaces. It is illogical to expect our infantry division as it is now organized and equipped to carry out missions such as these.

Can we utilize airborne troops to exploit atomic explosions? We certainly can and probably will, but the weakness of the airborne trooper once he is on the ground will also force us to employ other ground troops for his protection.

If neither the traditional infantry nor airborne forces, as presently organized, are completely adaptable to warfare in our day, is armor any more so? Let us try to be objective in the examination of our own branch. Let us try to find the truth and not simply a justification.

The greatest value of armor today is, paradoxically, not armor at all, but

its mobility and its flexibility. True, the armor provides an excellent shield against the blast and radiation of the fission weapons, and this relative immunity must not be overlooked. But essentially, it is the ability to move dispersed and still concentrate its fire that makes armor the arm of decision and the weapon of the future. If it has become useless—even impossible—to establish continuous fronts across the face of a continent, then we must rely upon our ability to move quickly overland and simultaneously to concentrate *firepower* without physically concentrating our troops. This is a function which can only be performed by mounted forces. Armor appears to be more adaptable than any of the other branches of the Army to fight the fluid battles of the Atomic Age.

But even armor is not yet ready to take the lead in working out the techniques of tomorrow. It is not ready because at this moment it is still splintered and scattered in pigmy-packets throughout the other forces. It is much closer to yesterday than to tomorrow.

In order to be prepared in advance for the type of warfare we know to be possible now, armor needs a laboratory—a military laboratory in which to test the new against the old. We have several installations and numerous boards constantly testing and improving our equipment. We have no facilities for testing tactics. The armor of the U. S. Army is, for the most part, scattered throughout the infantry divisions. We have only two real armored divisions. The remainder, armored in name only, are training infantry replacements!

The subordination of armor has come about because we were lost in the *Fog of Peace* somewhere between yesterday and tomorrow. When newspapers told us that tanks were as obsolete as the bicycle-built-for-two, too many of us believed them. We lost our most outstanding and most successful armored leader after the war. Today, no officer of sufficient stature has taken his place as an advocate of armor. We have rightly become cost conscious in the last eight years, but we seem to have become so conscious of cost that we have not yet begun to adjust our forces to the technical and scientific developments of our day. We have been forced to narrow our

planning and restrict our thinking to the peculiar situation in Korea, and this infantry-airborne trend must be reversed before we become engaged in a continental war, for neither is capable of effective employment in 1953, and we might easily be defeated before the weakness of the present lack of balance could be corrected. It takes years to organize, equip, and train an armored division. Who can say how many years are left? The cost of a failure to adjust may well be the loss of our freedom.

Another consideration: the continuous fronts we maintained in the past, flanks neatly tied into mountains or oceans, made it possible for us to establish a main supply route over the existing roads and to resupply our mobile forces by using wheeled vehicles. Now that our scientific weapons make it possible to pierce those continuous lines at will, these makeshift supply vehicles and inflexible supply routes are not adequate. Only ground forces flexibly organized, mounted in vehicles which provide complete battle mobility, and supplied by vehicles capable of operating cross country for prolonged periods, can successfully exploit the great power of contemporary weapons. Forces so organized and so equipped can absorb the destruction of fission weapons and maneuver to block the enemy's follow-up, denying him the advantage he has gained by their use. Only such a force could effectively exploit our own use of these weapons, moving quickly through the area of the explosion and striking deep in the enemy rear.

These changes will come about eventually because necessity will force them. If we wait until the possibilities are demonstrated for us by our enemies, learning may be painful and correction impossible.

The *Fog of Peace* is no mere figure of speech. It is a very real and dangerous weather which always prevails between yesterday and tomorrow. It has cost us lives and money in the past even though we were fortunate enough to have other countries fight the opening battles while we learned. Tomorrow we will likely be the priority target for any aggressor.

It's time we re-examine the battles of yesterday and prepare for those of tomorrow.

NEWS NOTES

More Land for Hood

Approval of the acquisition of 54,000 acres to be added to the Fort Hood reservation has been given by a subcommittee of the Senate Armed Forces Committee, it was recently announced.

This is the final action to release the funds approved last year which will permit the Engineers of Fort Worth District to proceed with the acquisition of the needed land. Expansion of the sprawling Central Texas post is essential to the training of the 1st Armored Division. The increased range and fire power in the newest model armored and infantry weapons with which the 1st Armored Division is equipped demand increased firing ranges, and consequently, greater impact areas.

Lieutenant General Bruce C. Clarke, now commanding I Corps in Korea, was the first to prompt the expansion of Fort Hood. Commander of the 1st Armored from its reactivation in 1951 until he was succeeded by General Doan in April, 1953, General Clarke prepared plans for the new firing ranges.

STATESIDE



Lt. Gen. I. D. White
To Commanding General, Second Army

The House approved the action last November.

In addition to affording longer firing ranges and larger impact areas for the 90mm and giant 120mm tank guns, the post's extended boundaries will allow 1st Armored soldiers to practice stream crossings and participate in other water training when Belton Lake is filled.

The additional land will also mean greater flexibility in the training for the men of Fort Hood on both a Combat Command and Division basis.

As anticipated, approval of the reservation's expansion was announced after an executive session of the Senate Armed Forces subcommittee recently. A letter from Secretary of the Army Robert Stevens urging favorable action was read to the subcommittee during a morning session. Until that time the detailed contents of the letter were not released.

The Army Secretary's request was a direct effort to speed up acceptance of the proposal and initiation of expansion plans.

Fort Hood is the only training site in the United States at this time where an armored division has adequate facilities to carry out its training mission, and with the additional area this post becomes the largest permanent armored post in the world.

Armored Personnel Carrier—Battle Tested

A recent news release from Korea reveals that the M75, Armored Personnel Carrier (formerly identified as the T18) was used for the first time in battle.

The Army lifted secrecy recently on how it evacuated United States Seventh Division soldiers safely in daylight along a perilous dirt road winding south from abandoned Porkchop Hill under heavy Communist shelling.

A division of Chinese artillery had the road zeroed in and it was consid-

ered a virtual highway of death.

The full-tracked vehicles, sheathed and roofed with tough armor plate, brought back the wounded and sound soldiers, and some of the dead.

They rumbled up to the hill's remaining defenders in daylight, under direct view and fire from the Communists.

Mortar shells, artillery rounds, machine gun and rifle bullets pounded the carriers. Only one was seriously damaged.

The carriers backed up to caves and bunkers to load on the Americans. They returned with Engineer teams that blasted bunkers and caves before the Chinese could occupy them. A carrier holds about 25 men, but the number employed in the operation is security information.

Maj. Gen. Arthur Trudeau, commander of the Seventh, said:

"This action proved without doubt the tremendous value of the T18 armored personnel carrier."

11th Armored Division Association Meets

The Eleventh Armored Division Association will hold its annual convention and reunion in New York City on August 14th and 15th at the Roosevelt Hotel. Details may be obtained by writing Mr. Kenneth W. Hanlon, 118 Thorne Street, Jersey City, N. J.

Noted Historian Passes Away

Dr. Douglas Southall Freeman, outstanding scholar of the Confederacy, and Pulitzer Prize winner, passed away on June 13th at the age of 67. The famous author, editor and educator will be missed by many Armor officers who were looking forward to reading more biographical material on George Washington. Among the best sellers here at ARMOR were his famous books *Lee's Lieutenants*. He served our nation well.

More Effective Ammunition

A secret metal powder process developed during World War II is currently aiding the effectiveness of 90mm ammunition and saving tons of strategic materials.

Mr. A. J. Langhammer, President of Chrysler Corporation's Amplex Division, disclosed recently, with approval of the U. S. Army Ordnance Corps, that Oilite iron rotating bands are being used on 90mm shells now being produced.

Two of these rotating bands are on each shell and the rifling inside the gun barrel digs into them to give the projectile the spin necessary for range, accuracy and stability in flight. Without bands the shell would either tumble in flight or range would be short and not accurate.

Rotating bands must be made of a soft metal, Mr. Langhammer said, in order not to damage the interior of the gun barrel. Originally, these bands were made of copper and gilding metal, but during World War II, Amplex engineers in cooperation with Ordnance developed a superior iron metal powder rotating band.

The powder metallurgy committee of the American Ordnance Association has been active in research and development work pertaining to the band, as well as in subsequent assembly work.

The metal powder bands, like most other Oilite parts, are porous and soak up lubricant which, under heat or pressure, oozes out to oil the gun barrel interior.

Mr. Langhammer, a pioneer in the development of powder metallurgy, said special care and control of manufacturing process must be exercised in the production of the 90mm rotating bands.

He explained that in processing rotating bands for just 1,000,000 of the

90mm shells, approximately 460,000 pounds of copper are saved and made available for other urgent needs.

Other savings result, he said, because the Iron Oilite rotating bands require no machining operation, which is characteristic of tube-formed bands. The Oilite band is formed to exact dimensions in a special press and is a precision product.

Special iron powder is poured in precise amounts into a large band-forming press. After forming, the parts are placed in a heat treating furnace which fuses the metal particles together. The bands are then immersed in a lubricant which is sponged up by the porous metal. Under pressure, friction or heat the lubricant comes out to ease any friction points within the gun barrel.

Editor of Combat Forces Journal Dies

Colonel Joseph I. Greene, Editor-General Manager of the *Combat Forces Journal*, recently passed away from a heart attack.

Colonel Greene had been Editor of the *Infantry Journal* since 1940, and the *Combat Forces Journal* since it commenced publication in July, 1950.

Colonel Greene graduated from West Point, class of 1923. He retired from active Army duty in 1946.

British Reveal New Tank-Killer Gun

The British Army exhibited its new 120mm recoilless antitank gun recently and said it was capable of stopping the largest existing tank.

The gun weighs almost one ton, about one third less than the 17-pounder it will replace. It resembles a

large bazooka and can be towed behind almost any vehicle or handled by hand.

Skysweeper to Undergo Army Troop Tests

Troop tests of the Army's new 75mm Skysweeper, large caliber automatic antiaircraft artillery weapon reported in the March-April issue of *ARMOR*, have commenced at Camp Roberts, California, the Department of the Army announced recently.

The tests, which will continue for an indefinite period, are expected to provide practical information concerning the weapon's performance under actual field conditions, maintenance and logistical data, and tactical employment. They will be conducted under supervision of the Chief of Army Field Forces.

Troops participating in the tests will be instructed in the Skysweeper's operation and capabilities, and will undergo training in all phases pertinent to it, including firing.

New British C-in-C for Middle East

General Sir Cameron Nicholson succeeds General Sir Brian Robertson as Commander-in-Chief of the Middle East Command, which is, geographically speaking, the largest of the British overseas commands.

General Nicholson gained fame in North Africa as an Armored Commander. He was the British Commander at Thala where he received the bar to the British D.S.O. for driving the Germans back after they had fanned out through Kasserine Pass. Later he gained fame as a Division Commander in Burma. Since the war he has served in the War Office and more recently as Commander-in-Chief of the Western Command in West Africa.

TOP COMMAND CHANGES



General John R. Hodge
To Retirement



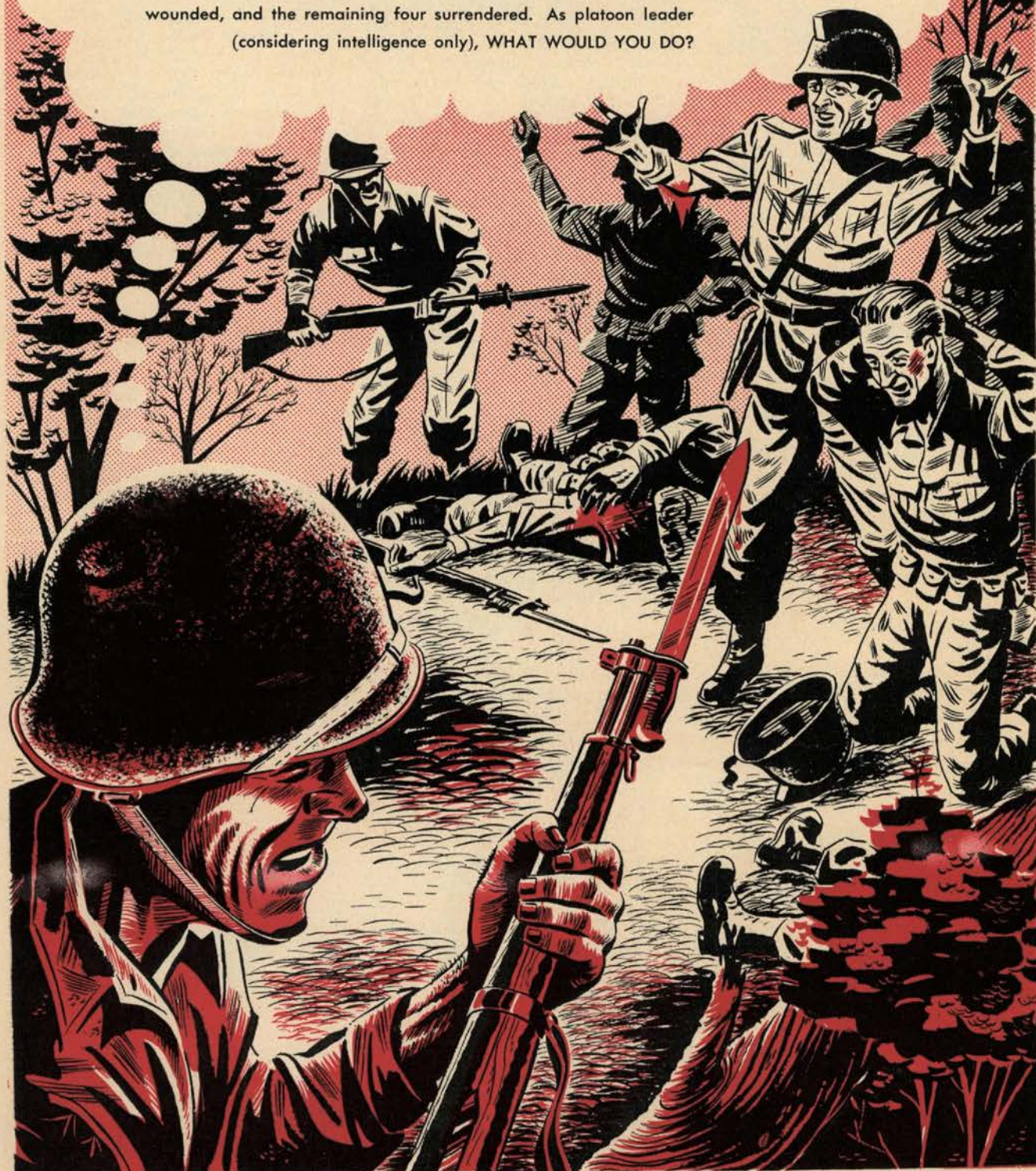
Lt. Gen. John E. Dahlquist
To Chief, Army Field Forces



Maj. Gen. George W. Read
To Army Field Forces

How would you do it?

An Aggressor nine-man patrol walked into an ambush set up by an armored infantry platoon. Four members of the patrol were killed, another was seriously wounded, and the remaining four surrendered. As platoon leader (considering intelligence only), WHAT WOULD YOU DO?



AN ARMORED SCHOOL PRESENTATION

AUTHOR CWO H.A.McDOWELL

ILLUSTRATED BY PVT. A.P. ZOELICK



THIS IS SOMETHING THAT PVT. DOE
PICKED UP YESTERDAY MORNING
NEAR THE JUNCTION OF HIGHWAY 18
AND 301, AND DID NOT REPORT!

SERGEANT, WHAT KIND
OF AN OUTFIT IS THAT?

SITUATION:

You are a reconnaissance platoon leader. You have been officially informed that the enemy is capable of using CBR agents. Your men have been trained in basic intelligence subjects and are battle experienced. However, you realize that intelligence training cannot be administered like a vaccination—one time and then forgotten. WHAT WOULD YOU DO?

(Turn to next page for solutions)

"How would you do it.?" solutions

SITUATION NR 1

Apply the "Five S" principles at once. They are: Search, Segregate, Silence, Speed of evacuation, and Safeguard.

1 Searching the prisoners relieves them of concealed weapons and also of any documents which may be of value to our intelligence. The dead are searched for documents, too; all documents are evacuated regardless of your opinion of their military importance.

2 Segregate the able prisoners into three groups—the lieutenant, the corporal, and the two privates. This prevents ranking members from exerting disciplinary influence over other members, coaching them on what to say, and warning them of their rights under the provisions of the Geneva Convention. The wounded prisoner is segregated from the nonwounded (or walking wounded) and evacuated through medical channels, but his capture must be reported through intelligence channels.

3 Silence is enforced between the prisoners and a state of discipline is maintained which is at least as high as that to which they have been accustomed.

4 Speed of evacuation is of great importance for the following reasons:
a. The prisoners are suffering to a varying degree from shock as a result of their capture and, therefore, are more vulnerable to early interrogation.
b. The quicker the prisoners are processed to the rear, the less their chances of escape. It also relieves front-line troops of the responsibility of caring for them.
c. Rapid evacuation and interrogation results in speedy access to tactical information, which tends to decrease in value rapidly.

5 Safeguarding the prisoners offers insurance that this potential source of information is available when it is needed. It also prevents escape and reduces the prisoners' ability to rejoin hostile forces to fight again.

The "Five S" principles are applied as soon as practicable after capture and throughout the evacuation process. At the first opportunity after capture, each prisoner is tagged, giving the date, time, capturing unit, and the circumstances of the capture. The documents removed from the prisoners normally are evacuated with the prisoners, and in the custody of the guard.



SITUATION NR 2

Realizing that this article of clothing is new, and that it might be special protective clothing, you obtain all possible information about the circumstances of the find from Pvt. Doe, impressing upon him that you are dissatisfied with his failure to report his discovery immediately. You then take it to the company commander with information as to where, when, and under what circumstances it was found. Furthermore, you might suggest that if this item has intelligence value, that fact should be made known to all members of the company, serving to alert them in locating additional items of equipment.

1 An article of clothing or equipment which is new or of a different type from that which normally is encountered is of vital intelligence interest. This item might indicate the enemy is preparing to use CBR, which would be of immediate tactical value. Later, technical intelligence personnel will make a full study of the reported item and the resulting intelligence will be disseminated.

2 Rarely does the individual soldier see the results of intelligence effort. If this find has intelligence meaning, it could be used as a teaching point to impress upon each soldier that he is the most valuable intelligence agency available to the Army.



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THE ROMMEL PAPERS

THE ROMMEL PAPERS. Edited
by B. H. Liddell Hart. 545 pp.
with Illustrations. Harcourt
Brace and Company, New
York, N. Y. \$6.00.

Reviewed by
Maj. Gen. Orlando Ward

Rommel was not only a great soldier, but an able writer. Intending

—The Editor—



Liddell Hart, an internationally famous military analyst, has been a military correspondent for several leading English periodicals, and military editor of the *Encyclopaedia Britannica*. His books include: *Through the Fog of War*, *The German Generals Talk*, and *The Other Side of the Hill*.

—The Subject—



doubt the ability, but certainly the courage and the luck of being where he should have been in the critical stages of battle. We see him in victory and defeat, always the mobile-minded soldier.

After Tunisia we follow his part in Italy in 1943, written from his records by his son.

Then comes his part in the preparation for the invasion, the cross channel attack, and the breakout at St. Lo, written most ably by his associate, General Fritz Bayerlein.

—The Reviewer—



Major General Orlando Ward, 1914 graduate of West Point, commanded the First Armored Division during combat in North Africa. Subsequently he commanded the 20th Armored Division in the ETO. Prior to his retirement, he was Chief of the Historical Division, Department of the Army.

to write his memoirs, when time permitted, he took advantage of every opportunity to dictate memoranda and to prepare a manuscript as the events in his campaigns unfolded.

Through the eyes of this competent soldier, an armored commander in the thick of it, we see the collapse of the French armies, as his division, one of the spearheads, thrust from the Rhine to Cherbourg.

We see his crossing of the Meuse, the battles around Arras and Lille, the crossing of the Somme, the Somme-Aisne breakthrough, and the capture of Cherbourg.

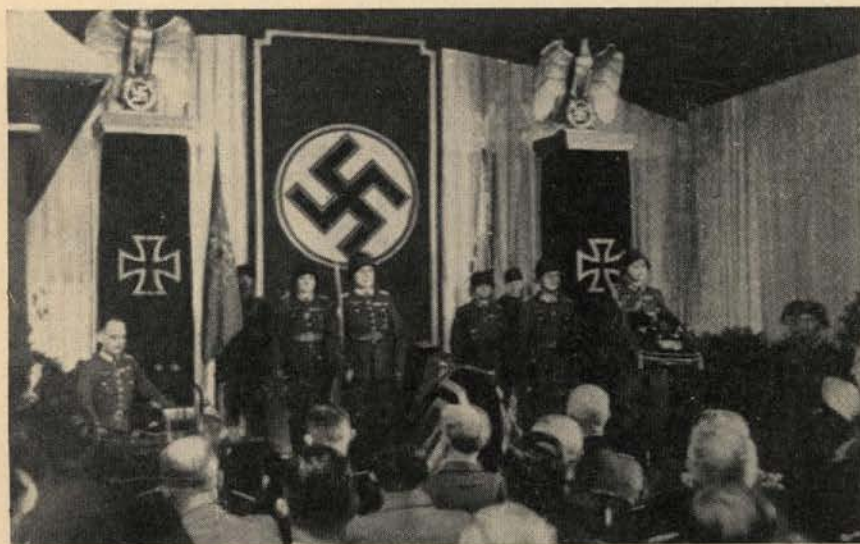
We accompany him to Africa and feel the ebb and flow of battle in his graphic description of the intimate participation of a leader who had no



Rommel (left) in WW I, with a friend.



At home, just prior to his death.



von Rundstedt announces Rommel's death and reads the funeral oration.



Frau Rommel and her son, Manfred, attend the funeral rites for the Desert Fox.

Finally comes the tragic end, written by Rommel's son, Manfred, and last, in summary, Rommel's reflections on military leadership and Africa in retrospect.

The result of the translation by Paul Findlay makes for clear understanding. Scattered through the whole book are appropriate extracts from letters to his wife, "Lu," throwing still more light on the character of the man, which otherwise would have been lost to the reader.

The editor, Liddell Hart, has acted as a most efficient analytical agent in providing appropriate background, comments and corrections throughout the text. He is correct in his opinion that "No commander in history has written an account of his campaign to match the vividness and value of Rommel's."

Some readers have the habit of underlining passages in books which particularly appeal to them. The following quotes from *The Rommel Papers* are some of those that are of sufficient interest to be underlined:

"Prejudice against innovation is a typical characteristic of an Officer Corps which has grown up in a well-tried and proven system. Thus it was that the Prussian Army was defeated by Napoleon. This attitude was also evident during this war, in German as well as British officer circles, where, with their minds fixed on complicated theories, people lost the ability to come to terms with reality. A military doctrine had been worked out to the last detail and it was now regarded as the summit of all military wisdom. The only military thinking which was acceptable was that which followed their standardised rules. Everything outside the rules was regarded as a gamble; if it succeeded then it was the result of luck and accident. This attitude of mind creates fixed preconceived ideas, the consequences of which are incalculable."¹

"However praiseworthy it may be to uphold tradition in the field of soldierly ethics, it is to be resisted in the field of military command."²

"The best form of 'welfare' for the troops is first-class training, for this saves unnecessary casualties."³

"This reverse took us completely by surprise."⁴

"The peril of the hour moved the British to tremendous exertions, just

as always in a moment of extreme danger things can be done which had previously been thought impossible. Mortal danger is an effective antidote for fixed ideas."⁵

"There often occurred to me the difference between the Professor of Economics and the business man, as judged by their financial success. The business man may not perhaps be on the same intellectual plane as the professor, but he bases his ideas on real facts and puts the whole power of his will behind their realization. The professor, on the other hand, often has a false conception of reality and although perhaps having more ideas, is neither able nor anxious to carry them out; the fact that he has them is enough. And so the business man has the greater financial success."⁶

"It is better to allow an incident to go unavenged than to hit back at the innocent."⁷

On page 307 Liddell Hart comments: "Both sides, indeed, successively provided an object lesson in the cost and futility of the 'direct approach'—the offensive spirit unguided by subtlety of mind."

"We either lose the position four days earlier and save the army, or lose both position and army four days later." Rommel's advice to the statesmen.⁸

"But the delay had enabled the Americans to organize some sort of a defence and they now fought back



As Commanding General of the Afrika Korps, Rommel attained world fame.



Rommel in the early days of the war.

skillfully and bitterly."⁹

"The American defence had been very skillfully executed."¹⁰

"The main defence against the tank is the anti-tank gun," General Bayerlein, quoting Rommel.¹¹

Bayerlein's description of the air attack of American bombers on the 25th of July, in tactical support of their troops, appearing on page 489, is a fine piece of descriptive writing.

"We, on our side, would have had very little advantage over the French and British in 1940, even with our up-to-date tank and air arms, if these arms had not been matched by equally up-to-date organisation, training and tactical doctrine.

"There was a particular clique that still fought bitterly against any drastic modernisation of methods and clung fast to the axiom that the infantry must be regarded as the most important constituent of any army."¹²

"Respect for the opinion of this or that great soldier must never be allowed to go so far that nobody dares to discuss it."¹³

"The greatest efforts must be made in the field of training to counteract the separatist tendencies of the various services and arms of the services. It happens again and again that the air force or army begins to play its own private political game."¹⁴

Liddell Hart, the editor, has written an outstanding description of the content of the book. His masterly introduction is a review to stop all



With his Chief of Staff, General Speidel, and Capt. Lang on the Western Front.

VON RUNDSTEDT

by

GUENTHER BLUMENTRITT

Here, neither a glorification nor a vindication, is the story of one of the dominant military figures of Germany by his Chief of Staff. Posing the question, "Why did the Army succumb to Hitler's influence?" the author shows the underlying psychological struggle between the old and the new elements. Aloof from politics, von Rundstedt finds himself under orders from a Supreme Commander such as no General Staff had ever encountered.

The inside facts of the battle for Europe are disclosed—the command to "hold back" before Dunkirk; von Rundstedt's criticism of the regime; his removal from command and reinstatement; private thoughts on the orders he receives; the political intrigue following Rommel's appointment to command the Western Beaches, which undermined the entire German defence system on the eve of invasion!

\$3.50

other reviews. No soldier should, and no true soldier will fail to read *The Rommel Papers* after reading Hart's introduction. It should be read, then re-read, and then read again. In connection with contemporary judgment on the ability of commanders, Liddell Hart comments, substantially, that *history has a habit of correcting the superficial judgments that temporarily keep company with victory*. His comment on Rommel's section on "Rules of Desert Warfare" is most comprehensive:

"The Rules of Desert Warfare' is a masterly piece of military thinking, while the whole narrative is sprinkled with sage reflections, often with a fresh turn—about concentration in time rather than in space; about the effect of speed in outweighing numbers; about flexibility as a means to surprise; about the security provided by audacity; about the stultifying conventions of the 'quarter-master' mind; about creating new standards and not submitting to norms; about the value of indirect rather than direct reply to the enemy's moves; about the way that air inferiority requires a radical revision of the rules of ground operations; about the unwisdom of indiscriminate reprisals and folly of brutality;

about the basic inexpediency of unprincipled expediency."

Other quotations from the introduction are:

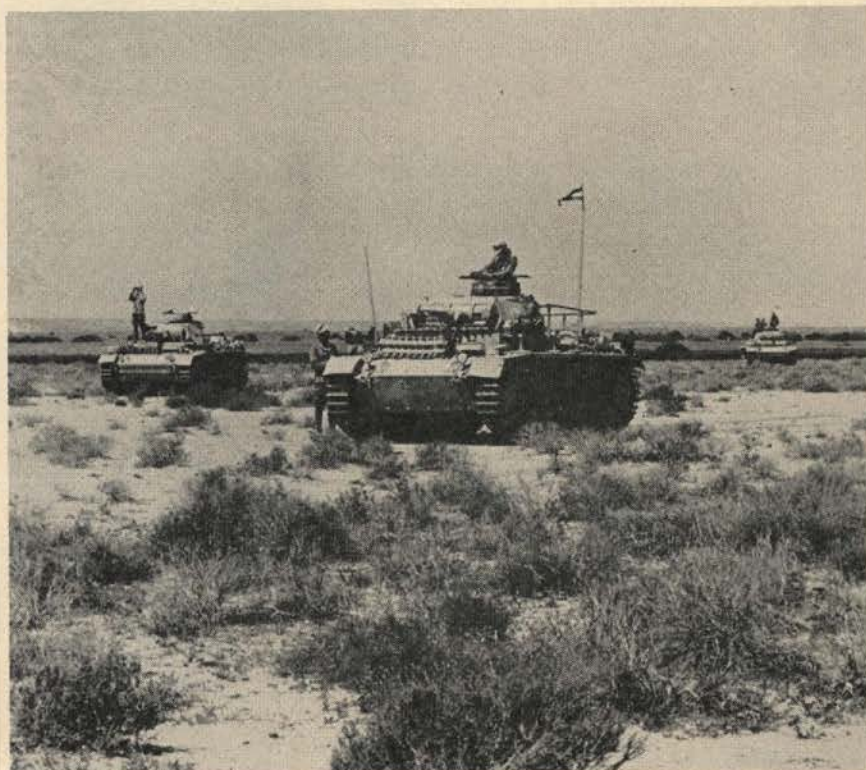
"The outstanding feature of Rommel's numerous successes is that they were achieved with inferiority of resources and without any command of the air.

"Save for his many narrow escapes from death, or capture in battle, he owed less to luck than many commanders who have attained fame."

"In the history of war great ideas have been less numerous than great generals, but have had a more far-reaching effect.

"All the great captains possessed in high degree this faculty of grasping instantly the picture of the ground and the situation; of relating one to the other and the part to the whole. Rommel most clearly had this faculty."

Here and there throughout the Rommel Papers some light is thrown on the destruction of enemy tanks. This should provide a means for testing the oft-repeated slogan, "The best tank destroyer is a tank." The question in my mind has always been, "Whose tank?" Can we economically always afford to have a tank that will be the best tank destroyer?



Tanks of the Afrika Korps advancing in Libya after the capture of El Brega.

ARMOR—July-August, 1953



Here the Allies met and defeated the cream of the crop of the German Army.

The Papers throw light on questions concerning civilian control of operations. The book should be on the "must" reading list for all members of the Congressional Armed Services Committees, from here on out. It should be read by Presidents, Prime Ministers, and Dictators.

In conclusion I see in *The Rommel Papers* illustration after illustration of his ability to use with great skill and effect the means placed at his disposal. I also see that he possessed outstanding ability to capitalize on the weakness as well as the strength of the enemy, at the same time being an advocate of maintaining "the decency in the soldier code."

I feel that in our system of training in the schools, as well as in the field, not enough variety is introduced into the forces representing the enemy, on matters pertaining to equipment, training, strength, and characteristics. Certainly you fight differently against an enemy who does not seem to mind if he is surrounded, and fights on, as against one who gives up and surrenders or withdraws when you appear in his rear. Certainly it is costly to stick to main highways and advance on each defended village by way of the main roads, and lose men and equipment the same way in

each attempt. Yes, *The Rommel Papers* is not only worth reading, but it is interesting reading. The book should be used extensively in the Branch Schools, the Service War Colleges and the National War College. They will find therein matters pertaining to tactics, strategy, and politics. For those who have finished their formal education, and are involved in responsible positions in the government, both military and political, a study of this book might warn against repetition of mistakes, and make for fewer errors in the future.

*All footnotes refer to page references in *The Rommel Papers*.

¹P. 203. ²P. 204. ³P. 226. ⁴P. 249. ⁵P. 244. ⁶P. 288. ⁷P. 292. ⁸P. 362. ⁹P. 398. ¹⁰P. 406. ¹¹P. 451. ¹²P. 517. ¹³P. 518. ¹⁴P. 519.

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FRANZ VON PAPEN

MEMOIRS

In these Memoirs von Papen gives the first full account of his activities as military attaché in the United States from 1913-15; the story of Allenby's campaign in the Middle East, as seen from "the other side"; a detailed analysis of the decay of the Weimar Republic and the events which culminated in his Reich Chancellorship. He describes the stand he made at the Lausanne Conference in his attempt to modify the hardships imposed on Germany under the Treaty of Versailles and thus prevent the collapse of parliamentary democracy, which he foresaw. He gives an account of his attitude to the National Socialists as their power increased; of his collaboration with Hitler, whose first government he joined as Vice-Chancellor, in 1933; of his Marburg speech, the murder of his colleagues, and his own house arrest during the Roehm Putsch; and of his subsequent acceptance of the posts of Minister in Vienna and Ambassador to Turkey.

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A British correspondent describes his three years as a prisoner of the Reds, with all the suffering and humiliation that thousands must still endure.

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When Edda Ciano escaped to Switzerland in 1944 she brought with her five of the seven notebooks which constitute her husband's entire diary. For a time the other two were thought to have been destroyed. They were recovered in 1947 and thus Ciano's Hidden Diary, packed with undisclosed information, completes the widely read and discussed document.

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THE RIVER AND THE GAUNTLET

In November, 1950, the United Nations forces were pushing for the Yalu River and the end of the war. But in mid-November, the Chinese had secretly infiltrated the rough Korean terrain in force, and in the early morning of the 25th they fell upon the most advanced units of the Eighth Army.

Men ask why it happened. Until now, the course of the battle itself has remained a mystery. This report mirrors the truth of the battlefield for the first time, distinguishes fact from theory, makes sense of the confusion and misunderstanding that are in the very nature of battle.

In his full reporting of this savage struggle, S. L. A. Marshall neither generalizes nor censures. His function is truly the reporter's as he paints his grim, dramatic, vivid picture of the truth.

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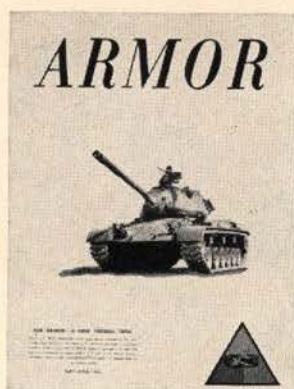
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The Magazine of Mobile Warfare **CARDED**

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Volume LXII

SEPTEMBER-OCTOBER, 1953

No. 5

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ARMOR magazine is published under the auspices of the United States Armor Association, and is not an official publication. Contributions appearing herein do not necessarily reflect official thought or indorsement. Articles appearing in this publication represent the personal views of the author and are published to stimulate interest in, provoke thought on, and provide an open forum for decorous discussion of military affairs.

KOREA 1950

A pictorial history of the first 6 months of the Korean conflict. Several hundred combat photographs, explained by short, terse captions, make up the contents of this graphic record of the early fighting in the tiny nation of Korea. Prepared by the Department of the Army, the photographs used here were made by cameramen accompanying the troops into action. 281 pages, with illustrations.

\$1.25

LETTERS to the EDITOR

A Precedent

Dear Sir:

I am enclosing a letter from a unit commander of the 50th Armored Division, New Jersey National Guard.

The letter itself is indicative of the splendid soldier that this individual is. I am aware of the fact that enlisted men are not eligible for membership. I will personally make the awards, and would like to know if the check is correct for the subscription desired.

Further, I suggest, that the letter might be published in ARMOR magazine; however, the writer, as he requested, should remain anonymous.

MAJ. GEN. D. W. MCGOWAN
Hq, 50th Armored Division
Trenton, New Jersey

Dear General McGowan:

Since becoming a member of the Armor Association, I have experienced a deep sense of admiration for the high degree or *esprit de corps* it fosters. I especially applaud its efforts to disseminate to the American Public, the taxpayers as well as the military man, the various ramifications of Armor and mobile warfare. It incites interest in a very important segment of our national defense.

As a means of creating a greater interest in Armor within the 50th Armored Division, I am respectfully requesting the General's permission to establish a "Commanding General Award" (or a similar title) which shall consist of "Associate Membership" in the U. S. Armor Association. Such award will be given, at the end of summer field training, to the outstanding noncommissioned of-

ficer in each major command

Combat Command A
Combat Command B
Combat Command Reserve
Engineer Battalion
Division Artillery
Division Trains
Reconnaissance Battalion
Provisional Battalion

I am enclosing my personal check in the amount of \$38.00 (8 x \$4.75) to cover membership costs for the current year.

I personally would like to remain anonymous and have the award presented by the Division. The manner of selection is of course the prerogative of the Commanding General.

● ARMOR is appreciative of the fact that a year's membership is worthy of an award for outstanding duty performed by the NCO's. The eight recipients are Corporal Edward O. Rappold, Sergeant Charles E. Von Rosenberg, Sergeants First Class George W. Dunham and Wesley E. Hawkins, Jr., Master Sergeants George S. Barraco, George R. Nutt and James J. McGonnell and Lt. Frank J. Ward. Congratulations! Ed.

The Navy is Mobile Minded

Dear Sir:

After reading the introductory copy of your magazine ARMOR from cover to cover I wish to subscribe for it and am enclosing a money order in the amount of eight dollars for a two years subscription.

Although I am a Navy man with over twenty-five years service I am very much interested in tank warfare and feel that your magazine is just the thing to keep me posted.

I am a Chief Communication Tech-

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Rates: See bottom of contents page.

nician, now on inactive duty in the Fleet Reserve, having been released from active duty last February after a two-year recall. I served as a Lieutenant during World War II and transferred to Fleet Reserve in 1948, was recalled in March 1951 and released again last February.

ORVILLE L. JONES
Dundalk, Maryland

Personal Military Aid

Dear Sir:

This is a letter of inquiry concerning the cost of subscription, plus postage required to send your magazine of mobile warfare, *ARMOR*, to a friend of mine in Java, Indonesia.

I am presently an instructor at the Air Command and Staff School, Air University, Maxwell Air Force Base, Alabama and am a regular reader of your magazine.

Prior to my present assignment I served as a United Nations Military Observer in Indonesia. While stationed there I worked closely with Indonesian personnel and became acquainted with a Maj. dan Njonja A. Wiranatakusuma of the Indonesian Army. We correspond quite frequently and he has requested your magazine.

Please send me the particulars as I would like to subscribe and send *ARMOR* to this Major as a gift.

LT. COL. R. W. HALL
Maxwell Field, Alabama

More NATO Armor

Dear Sir:

I am a constant reader of your fine magazine whose historical and technical articles on tanks and mobility in ancient and modern warfare I particularly appreciate.

On the front page of your January-February 1953 issue I noted the insignia of five armored divisions allotted to SHAPE.

At pages 30-31 of your March-April 1953 issue you have printed the pictures of six armored division commanders. Of these divisions and commanders, one is American, one is French, three are British and one is Belgian.

I would like to let you know that these armored forces are assigned to SHAPE under the Headquarters Allied Forces Central Europe (HAFCE). However, SHAPE also includes Headquarters Allied Forces North and South Europa (HAFNE and HAFSE).

I do not know what armored forces are under HAFNE, but I should like to point out some details on the armored forces under HAFSE, with particular reference to Italian armored units either assigned or earmarked or under completion for NATO purposes.

Italy has now three armored divisions equipped with Patton tanks. One of these is assigned to NATO and HAFSE and its name is "Ariete," in English "Ram," in Italian slang, "Caprone." By the way, "Il Caprone" is a monthly paper issued by that division, on behalf of the other two armored divisions too.

Another division, whose name is "Centaur," in English "Centaur," is earmarked for NATO and HAFSE; a third division called "Pozzuolo del Friuli" (a locality in the Venetian plain famous for a cavalry charge made by Italian horse regiments during World War I) is now under completion. These two divisions will be assigned to NATO and HAFSE in the near future, according to a statement made on 25th April this year by Lieutenant General Enrico Frattini, ITA, Commander, Allied Land Forces Southern Europe from his Verona headquarters to the *New York Herald Tribune*.

I hope the above will give you a fairly accurate picture of what concerns Italy. As for Greece and Turkey (the other two nations also represented in HAFSE) the following can be said:

Greece has three armored regiments, one for each of her national army corps. Presently two are equipped with old British Centaur tanks and the third one with M24 light American tanks.

Turkey has now six armored brigades on a reduced strength, which will become divisions equipped with American material.

GIULIO MACRI
Naples, Italy
Capt., Italian Army

HOW RUSSIA IS RULED

by

Merle Fainsod

Herein is described how the peoples of the USSR are ruled, how the Soviet political system actually works, how the great instruments of totalitarian power—the Party, the administration, the secret police, and the armed forces—are organized, how they operate, and the tensions and dissatisfactions they create. Here, also, the impact of Soviet rule is brought down to earth, to the lives of the people in the factories, in the army, and on the collective farms.

\$7.50



THE COVER

This cover shot, through the courtesy of the Republic Aviation Corporation, depicts teamwork of the highest caliber. Add to this team the efforts of the technical and administrative branches, plus our sister services—the Navy, Air and Marines. Further, we cannot overlook the civilian industry backing up this defense effort. Mold them together and it spells—Victory on the battlefield!

THE ARMY'S NEW



GEN. MATTHEW B. RIDGWAY

CHIEF OF STAFF

RICH indeed is our heritage in these United States to have available top-drawer personnel to rely upon in an emergency. Many of these top-drawer personnel were drawn from the services. An excellent example is our new Chief of Staff of the Army, General Matthew B. Ridgway, who has been called upon many times to fill the breach during the past thirteen tumultuous years in the history of our great nation. General Ridgway has answered each and every call, performing his duties as a fighting general, as an international statesman, and as an outstanding administrator. Upon the completion of each task, it could be said without hesitation: "Mission accomplished."

A 1917 graduate of the Military Academy, he was appointed a Second Lieutenant of Infantry. His first station was at Eagle Pass, Texas, with the 3d Infantry, followed by an assignment to West Point as an instructor. Upon graduating from the Company Officers course at the Infantry School, he commanded a company of the 15th Infantry at Tientsin, China. Returning Stateside he was assigned to the 9th Infantry at Fort Sam Houston, Texas.

General Ridgway's first taste of international politics was on his next tour of duty with the American Electoral Commission in Nicaragua from 1927 to 1929. After graduating from the advanced course of the Infantry School, he returned to Nicaragua for further duty with the Commission. A subsequent assignment to the Canal Zone was followed by a tour of duty in the Philippines where he served as technical advisor to the Governor General, Theodore Roosevelt, Jr.

General Ridgway graduated from the two-year course at Command and General Staff College in 1935 and was

detailed to the General Staff Corps where he served as Assistant Chief of Staff, G3, of the Sixth Corps Area, and in that same capacity with Second Army. He graduated from the Army War College in June 1937.

In May 1939 he accompanied General George C. Marshall to Brazil on a special mission. Upon his return he was assigned to the War Department General Staff for duty with the War Plans Division. In March 1942 he was assigned as Assistant Commander of the 82d Infantry Division. He assumed command of the division and remained in command when it was redesignated the 82d Airborne Division. In April 1943 he took the division to North Africa where he was responsible for planning and executing the first large-scale airborne assault in the history of the Army—the attack on Sicily. For extraordinary heroism during this action, he received the Distinguished Service Cross. He led his division in its rapid conquest of the western half of that island, and from September to November 1943, he led the 82d Airborne Division in the Italian Campaign. In June 1944, he parachuted with leading elements of his division into Normandy where he played a major role in the invasion of Western France. For this action he received the Oak Leaf Cluster to the Distinguished Service Cross. In August 1944, he was appointed commander of the XVIII Airborne Corps, in which capacity he directed operations in the Ardennes Campaign in Belgium, the crossing of the Rhine, the Ruhr Pocket, the crossing of the Elbe and the advance to junction with Russian forces on the Baltic on May 2, 1945.

After the cessation of hostilities in Europe, General Ridgway returned to the United States with his Corps

for redeployment to the Pacific, and was immediately flown to the Philippines in advance of his command to prepare for its participation in the proposed invasion of Japan. In October 1945, he was assigned to command the Mediterranean Theater of Operations, and was appointed Deputy Supreme Allied Commander, Mediterranean. In January 1946, General Ridgway was assigned to represent General of the Army Dwight D. Eisenhower on the Military Staff Committee, United Nations, and subsequently, in addition to this duty, designated Senior United States Delegate to the Inter-American Defense Board, assuming chairmanship. In June 1948, he was assigned as Commander in Chief, Caribbean Command. Thirteen months later, he became Deputy Chief of Staff for Administration, United States Army.

Upon the accidental death of Lieutenant General Walton H. Walker in December 1950, General Ridgway assumed command of the Eighth Army in Korea. Typical of his zeal to inform his subordinates of vital issues, General Ridgway soon after he assumed command of the Eighth Army issued the following statement to his men:

"In my brief period of command duty here I have heard from several sources, chiefly from the members of combat units, the questions, 'Why are we here?' 'What are we fighting for?'

"The answer to the first question, 'Why are we here?' is simple and conclusive. We are here because of the decisions of the properly constituted authorities of our respective governments. As the Commander in Chief, United Nations command, General of the Army Douglas MacArthur said publicly . . . 'This command intends to maintain a military position in Korea just as long as the statesmen of the United Nations decide we should do so.' The answer is simple because further comment is unnecessary. It is conclusive because the loyalty we give, and expect, precludes any slightest questioning of these orders.

"The second question is of much greater significance, and every member of this command is entitled to a full and reasoned answer. Mine follows:

"To me the issues are clear. It is not a question of this or that Korean town or village. Real estate is, here, incidental. It is not restricted to the issue of freedom for our South Korean allies whose fidelity and valor under the severest stresses of battle we recognize; though that freedom is a symbol of the wider issues, and included among them.

"The real issues are whether or not the power of western civilization, as God has permitted it to flower in our own beloved lands, shall defy and defeat Communism; whether the rule of men who shoot their prisoners, enslave their citizens, and deride the dignity of man, shall displace the rule of those to whom the individual and his individual right are sacred; whether we are to survive with God's hand to guide and lead us, or to perish in the dead existence of a Godless world.

"If these be true, and to me they are, beyond any possibility of challenge, then this has long since ceased to be a fight for freedom for our Korean allies alone, and for their national survival. It has become, and it continues to be, a fight for our own freedom, for our own survival, in an honorable, independent national existence.

"The sacrifices we have made, and those we shall yet support, are not offered vicariously for others, but in our own direct defense, wherein certain principles mean more than life.

"In the final analysis, the issue now joined right here in Korea is whether Communism or individual freedom shall prevail, and, make no mistake, whether the next flight of fear-driven people we have just witnessed across the Han River, and continue to witness in other areas, shall be checked and defeated overseas or permitted, step by step, to close in on our own home lands, and at some future time, however distant, to engulf our own loved ones in all its misery and despair.

"These are the things for which we fight. Never have members of any military command had a greater challenge than we, or a finer opportunity to show ourselves and our people at their best, and thus be an honor to the profession of arms, and a credit to those who bred us."

In April 1951, General Ridgway was appointed Commander of the United Nations Command in the Far East, Commander-in-Chief of the Far East Command and Supreme Commander for the Allied Powers in Japan. In May 1952, he was named Supreme Commander, Allied Powers, Europe, with headquarters at Paris, France, which assignment he held until he was sworn in as Chief of Staff of the Army on August 15, 1953.

That General Matthew B. Ridgway is a soldier and a statesman, there is no doubt.

His appreciation of the support rendered by civilian industry was exemplified in a speech made in 1949 to the Eighth Infantry Division Association:

"An examination of your Army will show that we are making material progress in blending together the resources of our nation to produce the best Army in the world.

"We are combining the best weapons that our technicians can develop, and which our great industrial know-how can produce, with the best leaders and technicians that our people can develop—and we are doing it within the framework, and according to the precepts of our American way of life. These are the principles that have produced the fine tradition of American armies."

On the same occasion he extolled the virtues of the other services when he stated:

"Because it is recognized that the dominant factor in a future war would be air power, the Army plans to place increasing emphasis upon airborne, air transportability, and air-ground support techniques.

"For it is only by air that we can combine maximum mobility and maximum firepower.

"This, of course, will entail very close cooperation between Army troops and the Air Force and air elements of the Navy."

In assuming his duties as Chief of Staff of the Army, General Ridgway focussed favorable public attention on his distinguished leadership with the announcement of his unswerving support of his civilian superiors and his concern over the prestige of the Army and the welfare of those military careerists who make up its hard core.

General Ridgway's concern over adverse conditions affecting those wishing to follow the military service as a career were reported in the *New York Times* of September 1, 1953, to have stemmed from two particular factors:

"A growing tendency on the part of the public to discredit the armed services and their leaders.

"A gradual nibbling away by Congress of so-called 'fringe benefits' such as medical and dental care for dependents, commissaries, post exchanges and similar mitigations of living costs."

He was echoing the feelings of General Omar N. Bradley, who is reported to have written to the Secretary of Defense of his "concern about the growing lack of confidence among armed forces personnel in the military service as a worthwhile and respected career." According to the *New York Times*, same date, General Bradley referred to "habitual slurring of the officer corps by some members of Congress and some elements of the press."

In taking this strong stand on a matter that involves everyone who wears the uniform of the armed forces, General Ridgway has stepped into the leadership of the Army with the rank and file unanimously behind him.

In his determination to protect the prestige of the Army, and the interests of its loyal and deserving personnel, the United States Armor Association supports General Ridgway with enthusiasm.

TO THE MEN AND WOMEN OF THE ARMY

Upon being sworn in as Chief of Staff, United States Army, I thought it appropriate to address brief remarks to the small group of distinguished guests present at the ceremony. In fact, however, I was speaking not to them alone but also to all of you—both in and out of uniform—wherever you may be stationed. The remarks were these:

"When the President transmitted to the Congress his plan for reorganizing the Defense Department, which plan has since become law, he emphasized two essential objectives—the maintenance of democratic institutions and the protection of the integrity of the military profession.

"The first is clear. It means, in my case, service under the direct personal command of a distinguished civilian of highest integrity, Secretary Stevens, and through him under another great American patriot of highest character, Secretary Wilson.

"Today, more than ever, our future depends on the moral stature of those clothed with great authority. We are very fortunate to have these civilian commanders.

"The President's second objective, while likewise clear to us, needs much continuing explanation to many in our Government and certainly to the American people.

"The integrity of the military profession is indispensable to an effective, efficient military establishment, and that in turn to the Nation's security. The term itself, 'integrity of the military profession,' implies an Officer Corps of such character and competence as will provide the highest professional and spiritual leadership; and a Non-Commissioned Officer Corps indoctrinated and inspired by the Officer Corps, whose precepts are its guides and whose standards it emulates.

"It implies fearless, forthright expression of honest objective professional military views.

"It implies completely loyal execution of decisions, once announced by proper civilian authorities.

"To attain this second objective will require a full recognition, by civilian authority, of the qualities of integrity, devotion to duty, and loyalty, and extension by the civilian commanders of a like loyalty to the military services.

"As a fundamental institution in the development of our national life, the United States Army has played a proud historic role. It has produced leaders unsurpassed in character, competence, and courage—moral equally with physical.

"I accept with pride and trust in Divine guidance, the challenge of continuing the service of great distinction which my predecessor General J. Lawton Collins has rendered. It shall be my constant purpose, within the scope of my responsibility and authority, to insure that the highest traditions of the United States Army are maintained in all their finest aspects; that the Army accomplishes in full its assigned missions; and that the men and women who wear its uniform, and their dependents, receive the full measure of respect and consideration from their countrymen, which their high-principled devotion and utter loyalty in both peace and war so fully merit."

Today my admiration for you, the American soldier, is greater than ever, and I can find no adequate words to express my own feelings of humble pride in sharing service of country with you.

You will have my complete and unqualified support. I shall expect yours.

MATTHEW B. RIDGWAY
General, United States Army
Chief of Staff

These next three pages are remarks made by General Ridgway at his first meeting with the Department of the Army Staff, two days after he assumed office. Although we were already on the press these remarks were deemed of sufficient importance to withhold other material and bring them to the attention of all Association members and others who read these pages, in order that they might gain insight into the thoughts of our new Chief of Staff.

IN analyzing my thoughts for expression at this meeting, I came to the conclusion that the most important point, I believe the one uppermost in my mind, was:

Recognition of the limitless opportunity for purposeful service.

I believe every one of you subscribes to the criterion that there is some purpose beyond the powers of humans to discern for which we were put on this earth. For my part, I subscribe to that fully, and I believe that the greatest purpose which we are permitted to see is to serve others. I believe it is no platitude to say that never have the objectives of higher purposes been in greater need of service from men and women of high-principled integrity than the purposes for which the founding fathers established this Nation. I believe that never has this Nation, and the cause of freedom of which it is today the pre-eminent leader, been in greater need of such service.

Each of us has been rendering, I am sure, the best service of which each is capable. You have been doing so as a closely integrated team, concerned with the whole range of global problems confronting our Army and our Military Establishment. I have likewise been doing it, but in distant fields. However broad my responsibilities seemed and were, I know they were but regional, compared to yours.

Now we join to share service together of the broadest scope and of the highest plane, and as I join you, I want you to know of my profound respect for the service you have been rendering and to express the earnest hope that together we can render still better service.

I have known each of you for years, some more intimately than others, but all with a sufficient knowledge of your conspicuously superior records to appreciate them fully.

Some of the things I shall say will

touch upon matters which, at this initial stage of our teamwork, I think are of sufficient importance, either as basic principles or as indications of my working methods and line of thinking, to bring to your attention.

In the first approach to any job, regardless of magnitude, my mind follows a certain sequence of steps.

First, there is a *mission*.

Second, this *mission* breaks down into certain *functions* to be performed, in order to accomplish the *mission*.

Third, there must be a sound, simple, positive, workable *organization* for the performance of these functions.

Fourth, *men* of the proper caliber must be selected and assigned, each in his proper place, to this *organization*.

Fifth, the *organization* as a team must then *perform* its *functions* and *accomplish* its assigned mission, and

Finally, the execution or *performance* must have that vital essential at all times and at all stages of *command supervision*.

Now, I have been here in Washington for thirty days. Little of that time has been available for me to go through this mental process, and even less was available before I relinquished command to General Gruenther four hours before departure from France. This has been because of other assignments given me by proper authority. I, therefore, am just starting to follow through this pattern of thinking, and it occurs to me that while, of course, I will receive the major benefit, you, too, may perhaps glean an idea or two of value.

I shall not try, on this occasion, to state the Army's missions in detailed form, but I do wish to recall to your mind that however you word the Army's mission, there is but one final criterion by which to judge what the mission was and the manner of its

performance. That criterion is *success in battle*—success and all that it contributes in battle to the Nation's military team.

The modern state and its government, particularly our own, is about the most complex organization yet developed on earth. In the formulation of its policies and in their execution, the main fields, such as the political, economic, financial, social, and military, are inseparably interdependent. No one field can any longer be isolated and major decisions in it made without regard to one or more of the others.

Yet, and I think this is basic—at least it is in my way of thinking—the responsibility of the professional military man lies in the professional military field. His overriding responsibility is to give his honest, objective, professional military advice to those civilians who by our Constitution are his Commanders. It is not his responsibility to decide whether the military means which he determines are the minimum essential to accomplish the military task assigned him will cost more than the Nation can afford. He has not been trained for that. It is not, I submit, within his field of responsibility. He must, of course, as every senior commander is today, be aware of the major factors in these other major fields. He must recognize, as every senior commander does today, the imperative necessity of maximum economy and efficiency in the utilization of whatever military means his Government may make available to him. There is no question of this any more than there is any question of the loyalty of these senior officers in carrying out the decisions announced to them by proper civilian authority.

The point I wish to make here, and I repeat it for emphasis, is that the professional military man has three primary responsibilities:

First, to give his honest, fearless,

objective, professional military opinion of what he needs to do the job the Nation gives him.

Second, if what he is given is less than the minimum he regards as essential, to give his superiors an honest, fearless, objective opinion of the consequences, as he sees them from the military viewpoint, of this shortage, and

Third and finally, he has the duty, whatever be the final decision, to do the utmost with whatever he is furnished.

Now let me return to what I was talking about a moment ago, namely, our overriding mission.

The Army's peacetime successes, however numerous, are secondary in importance to this one overriding, vital requirement—it must win in war.

Now there are certain simple essentials by which it can and will win in war.

In simplest terms, these are *men*, *money* and *morale*, or, since we don't control the acquisition of money, these essentials are:

First—arms and equipment.

Second—training.

Third—leadership.

None of these needs much explanation to you, and the first doesn't need much explanation to the American people. I think they recognize pretty well that the days of club and sling, of spear and ax have passed, and that no Army or military force today can expect success in battle if insufficiently or inadequately armed, no matter how well trained or how well led.

The other two basic elements need a lot of continuing explanation to our people, and one of them at least, *leadership*, needs a lot of continuing study by ourselves.

Now, developing the thought a little from these last two elements, *training and leadership*, two basic requirements stand out.

First, foremost, and always, we must have an Officer Corps, comprising a professional, long-term cadre adequate both in size and in quality. This is the heart and soul of any military organization. None will ever be better, or even quite as good, as its Officer Corps. This is the great reservoir of the character, of devotion to duty, of loyalty, of professional competence—the fountainhead by which tradition is planted and nourished.

If we are to have this, and without it we do not have an Army, we must have represented in our professional officer cadre a cross section of the Nation's life, a fair share of the best the Nation produces in character, in intellect, and in culture. If we do not, if it is not representative of a cross section of America, it will not, in the long run, have that support of the American people which it must have to accomplish its ultimate mission.

Next, and closely after the Officer Corps, is the requirement for the Noncommissioned Officer Corps, with its professional cadre of career personnel, inspired by the precepts of the Officer Corps whose standards it emulates.

These, gentlemen, are the essentials with which leadership can accomplish the seemingly impossible. These are the essentials without which ultimate success is impossible. These are the elements to which I invite your attention, and which I suggest we, all of us, keep before our eyes, however numerous the distractions of our day to day concerns.

With these two instruments with which to work, an Officer and a Noncommissioned Officer Corps of proper quality and adequate size, we can then be confident that the young men and women of America turned over to us to train will receive the best in professional, physical, and spiritual education that it is possible to provide.

This brings me to the last of the major generalizations which I wish to make: that is, the Officer and Enlisted Man relationship.

When we were young officers, we served a long apprenticeship, during which our primary concern was the care, training, and welfare—professionally, physically, and morally—of the men under our command. We had, on the average, between fifteen and twenty years to learn those lessons. They became ingrained. We recognized a responsibility twenty-four hours a day, seven days a week, for these men. We knew affection for them in our hearts, and we knew their unfailing response to real leadership. They were American soldiers, and there aren't any finer ones.

We must pass on to the younger officers the know-how of handling the American soldier. We have not taught the younger officers what to us became second nature—the responsibility

of the officer for his men. We have that responsibility here in Washington equally with our brother officers in the field. We exist here in the Pentagon for one primary purpose, and that is to ascertain, evaluate and, to the limit of our abilities, to meet the requirements of the commanders in the field who are charged with the execution of decisions made here. I shall expect that no matter how engrossed we become in the multitude of staff procedures here we remember these basic elements for which we, individually and collectively, are responsible.

I have a few other topics on which I wish to dwell, unrelated for the most part but deserving I think of being brought to your attention. If you find them, or anything else I have said this morning, of value to you in the exercise of leadership by your own chosen methods, then I shall hope you will make a note, and use them.

We face a situation unparalleled in the history of our or any other country. We are in the presence of evolving social and scientific forces, of which we can perceive only the general trends at this time.

The more confused we may tend to become, the more imperative is it, therefore, that in our thinking we keep simple, basic principles and objectives before our minds.

One of these basic principles was just recently stated by President Eisenhower in transmitting to the Congress Re-organization Plan No. 6, since become law. In it he stressed several points, one of which was the necessity for the maintenance of democratic institutions. This point is illustrated by the reiteration of a principle to which America has been unfailingly dedicated: the principle of civilian control of the military.

The command channels by which that control is to be exercised have been made unmistakably clear. The channel goes from the Constitutional Commander-in-Chief to the Secretary of Defense and through him to the Service Secretaries. In my own case, my commander is Secretary Stevens. I had not known him until last April, when he first visited my command in Europe. I want to say, without reservation, that the Army has as its civilian commander as high-principled a man as the Nation can produce.

In a short talk he made at the Quantico Conference he said, "No one ever had more respect for the Army or more humility in approaching my task than I. I shall defend its prestige and rightful privileges to the utmost."

I am proud to serve under Secretary Stevens as Chief of Staff, and I feel sure you share that feeling with me.

Now I confide to you senior, responsible members of this staff the responsibility for proper indoctrination of all the personnel in your respective divisions, to the end that our teamwork and the mutual respect and understanding essential to teamwork be steadily strengthened and broadened.

Please remember, in this as in everything else I have presented today, there is a responsibility on each of us to educate others. Actually, everything in life can be translated into some form or other of educative process, or, if you like, of training; and the requirements for training, and for leadership, are just as active and just as necessary in this great staff as they are in any field command anywhere in the Army. It plays just as vital a part right here as in the Seventh Army, the Eighth Army, or anywhere in the Continental United States.

Now a few points secondary in importance to what I have already said but still worthwhile, because they represent some of my idiosyncrasies as applied to the tasks we must work out together.

* * *

Loyalty. The necessity for this basic military essential is so clear that you scarcely ever hear it mentioned. Yet it is not automatic, and it is not always present—up, down, and laterally in equal degree—as it must be. This is not so much through design as through failure to cultivate it and to recognize its eternal importance. It either does or does not exist, and sometimes determination is difficult. It is particularly vital today in this period when we cannot see very far beyond the horizons, and when the utterances of senior officers, whether made publicly or in private groups, assume ever-increasing significance.

I shall expect the officers of this Staff to present their own honest views, fearlessly, forthrightly, but ob-

jectively in the light of their own conclusions as to what best serves the Army's over-all interests. The most dangerous adviser to have around is a "Yes Man," and the most useless is one who thinks of self instead of service. I shall also expect, at all levels, that having expressed his opinions and having heard the decisions, his entire support will then be put behind the execution of that decision, regardless of what his views had been.

Cliques. I have not the slightest knowledge of the existence of any cliques within this headquarters. I pray there are none, but I want to say in unequivocal terms that I will not tolerate such vicious elements if it is within my power to eliminate them.

Criticism. Indulgence in criticism is an ever-present temptation. If yielded to it can quickly become a vice difficult to break. In the civilian field it is of lesser importance. In military organizations it is of vital importance. It tends to corrode, and corrosion produces friction; and friction generates heat and eventually spoils any machine if uncorrected. I am not talking of honest differences of opinion, least of all at those times when issues are being debated. I am talking of the practice of vicious "crabbing" about the official actions of proper authority.

Briefing. It is of the highest importance. It is impossible to read the masses of paper which your conscience might dictate that you should read, and the only alternative is oral presentation. I expect only matters of major importance—generally speaking those requiring basic decisions or providing basic information which I should have—to reach me. When they do, I want in general an oral presentation by an officer thoroughly familiar with the major points on each side of every issue involved.

I want no *ex parte* presentations at any time. If unresolved issues are presented to me, the views of the principal advocates of alternative courses of action must likewise be presented. Where the matter involves execution by a principal subordinate command, I want, in advance wherever practicable, the views of the commander who is to be charged with the responsibility for execution.

* * *

The Work Load. I think it is ex-

cessive. I think it must be and can be reduced. I shall seek the full cooperation of Secretary Stevens and the Under and Assistant Secretaries. But within our own resources, I think we can do much, by better organization—more of the spoken than the written word, less attention to the written record for alibi purposes, and more efficient and adequate delegation of authority to subordinates.

Now I have covered a good many things, all of them, in my opinion, of substantial and some of essential importance. There are many others, I don't pretend to know the answers yet. I have a lot to learn from you before I can expect to know the answers; but with your full help, on which I count, I am confident we shall find them. . . .

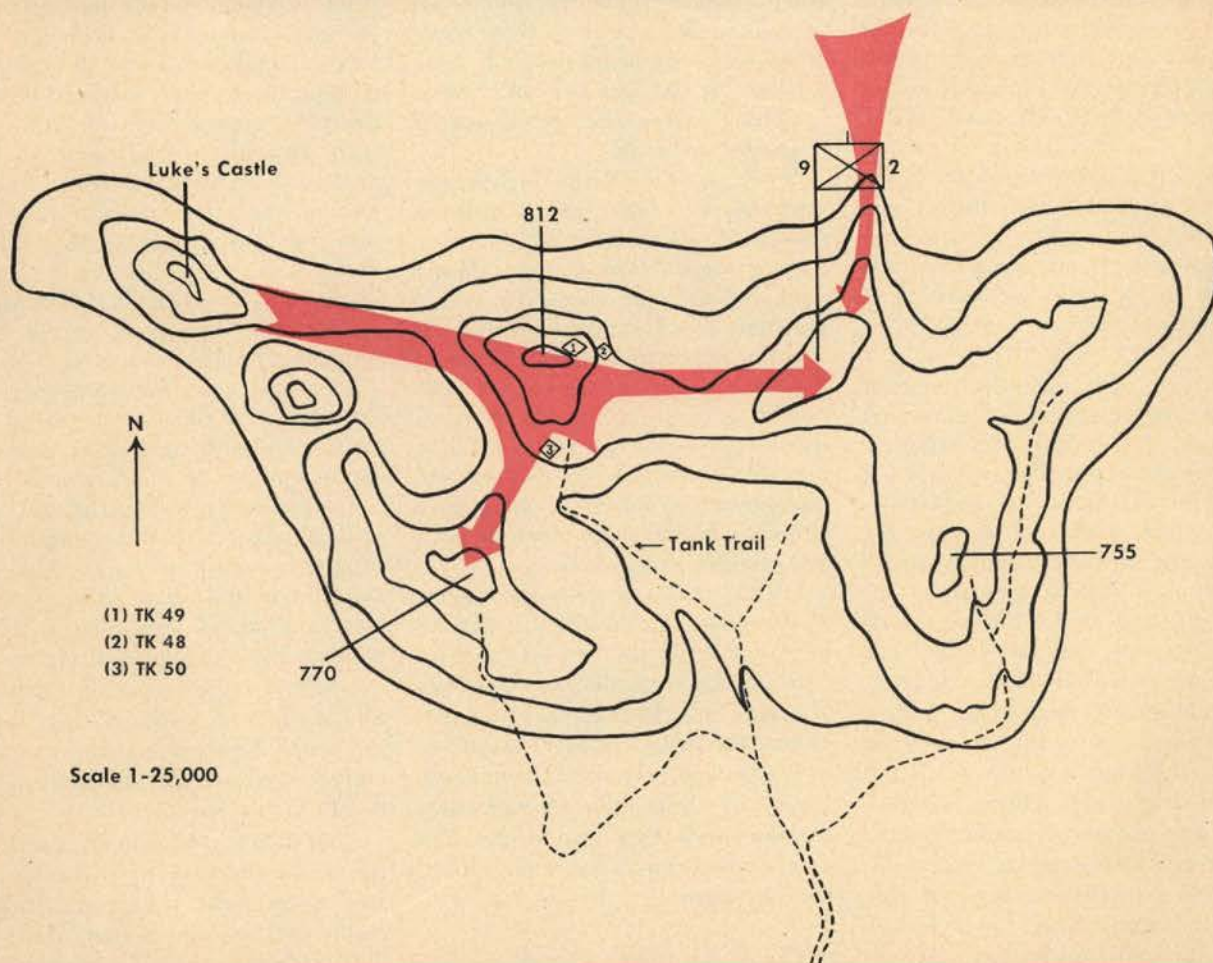
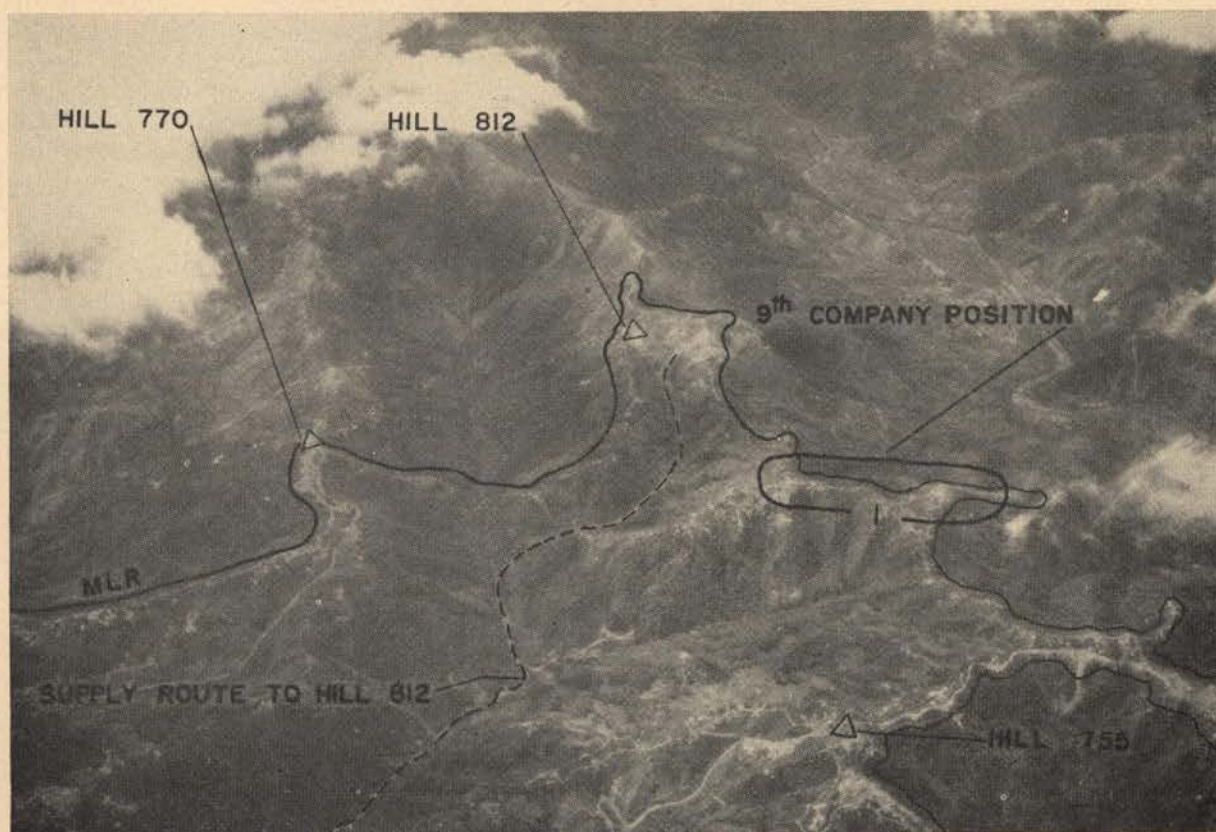
I have one note on which I want to close this first meeting. I am profoundly conscious of the privilege of sharing service with you and in seeking together to contribute our utmost in the discharge of the tremendous responsibilities with which the United States Army is charged. I have the deepest respect for what you have done, and what you are doing. I have no major changes to make at this time. I shall make none at any time without those most concerned having the fullest opportunity to discuss them with me and to participate in the process of reaching decisions. I shall have in these matters but one criterion: the over-all good of the United States Army in the light of the counsel which you and our field commanders give me and then of the best judgment I am capable of exercising.

I am convinced that whatever specters appear to some to lie ahead on close or distant horizons are the visionary imaginings of timid minds.

Decisions that will try the soul may well lie ahead. But the strength of a people is found in its energies, its capabilities, and above all in its character and moral principles. I think we have those in abundant measure.

I believe we were put on earth for a high purpose. I believe the American people have a reservoir of material and spiritual strength amply adequate to fulfill that purpose.

I am utterly confident in America's future, in the capacity of its leadership to meet the future, and in the ability of the Army to contribute to that leadership in fullest measure.



Where maneuverability is limited and two forces desire to occupy the same terrain, a slugging match is bound to ensue. Some of the lessons learned while battling for Hill 812 are worth recording for future use.

FIREPOWER PAY-OFF

by FIRST LIEUTENANT CLARK C. MUNROE

THIS is a story of tankers in battle. No sweeping envelopments or thrusting penetrations mark this fight. Rather, it resembles a prolonged toe-to-toe slugging match whose prize was a few hundred yards of dirty, shell-pocked mountaintop. Though it lacks the spectacular aspects of a wide-open war maneuver, the battle which took place on Hill 812 deserves to be recorded.

If you look at Hill 812 from the air you see that it joins its two neighboring Eastern Korean heights to form a large, irregular arrowhead which points generally to the Northwest. A long curving ridge on the upper side connects the point of the arrowhead, Hill 812, with the right tip of the base, Hill 755. A lower ridge connects 812 with Hill 770 which forms the left tip of the base. A third sharp ridge extends Northwest from Hill 812 and serves to connect the arrowhead to the enemy MLR dominated by a peculiar rocky mound known as "Luke's Castle."

On the ground these positions are characterized by deep trenches honeycombed through the hills, log-roofed bunkers and tank firing slots carved from solid rock. A combination tank trail and supply route fills the draw below Hill 770 and then swerves Northwest to climb between the upper and lower ridges to the crest of Hill 812. At best this trail could handle four tanks abreast at a point 300 yards below the crest. Elsewhere it could support only one tank.

In May of 1953 the MLR dominated by these hills was occupied by a Republic of Korea division which was part of the X United States Corps. The 140th Tank Battalion commanded by Colonel William M. Fondren was furnishing the tank support. The 140th had been supporting the ROK's since they had taken over in the 812 sector, and for months the hill was considered to be one of the most likely targets for a Red attack. In the latter part of May every sign pointed to the probability that the enemy was preparing to move.

Captain D. C. Doherty's Company B was on line with its tanks in the 812 sector in late May, and on the crest of the hill itself there were three tanks under command of Lieutenant

J. F. Fitzgerald—number 50 on the left, and numbers 48 and 49 on the right with 49 slightly forward of 48. All the tanks were tied in with wire and radio to each other, to the tank company, to the ROK's on the ground, and to the supporting ROK artillery battalion. The radio nets were given complete checks at regular intervals each day.

Indications developed on the first of June that the North Koreans were going to hit Hill 812 that night. By 2100 hours the infantry and tankers on the hill had been alerted. The S-3 of the tank battalion phoned all positions at 2155 hours to confirm the need for a continued alert status. The Reds cut loose at 2200 hours.

The Communist attack was preceded by one of the heaviest artillery and mortar preparations they had used along the Eastern front in two years. The entire length of the ROK Division MLR erupted with fire; Hill 812 collected more than 10,000 rounds in the first 24 hours. An effective enemy counter-battery fire fell in all friendly artillery positions and the tank company and battalion CP's were blanketed with shells.

Within ten minutes all wire communications to the tanks and infan-

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Photo—U.S. Army

The tank trail leading to 812 from 770. The ROK's were on hill to the right.

try were knocked out with the exception of one line to the supporting artillery. Radio silence was broken and contact was re-established. Lieut. Fitzgerald's first message to the company revealed that enemy forces had overrun friendly outposts between Hill 812 and "Luke's Castle," and were moving onto the forward slopes of 812 itself. He informed Captain Doherty that he was moving his tank, number 48, forward to provide better cover for tank 49. Enemy troops appeared between the two tanks as he was transmitting, and since no friendly infantry were to be seen, he called for VT artillery fire on his position. The fire dispersed the attackers and he was able to move his tank forward as planned. During the move his driver suffered a wound from enemy fire and a medic attempting to come to his aid from a nearby bunker was killed on his way to the tank. Before the platoon leader could take further action he, too, was wounded by the intense enemy fire which a few minutes later swept away the tank antennae breaking Fitzgerald's radio contact.

Back at the company CP, the company commander had already alerted a tank section under command of Lieut. C. G. Madsen to prepare to move out. Before giving Madsen the word to roll, the company commander went forward at 2300 hours to make

a personal reconnaissance of the narrow tank trail leading to 812 to determine the extent of the enemy penetration and the feasibility of moving this section up the trail in the dark. He concluded that the movement would be possible utilizing illumination from flare planes now over the area, searchlight reflection and artillery illuminating shells. The enemy, from all indications, was in control of the high ground of 812, but had not yet exploited his advantage by moving down the trail. With the friendly infantry forced back along the upper and lower ridges, the Reds were in the clear to move down the trail and assault adjacent friendly positions from the flanks and rear. To plug this hole and to give all possible help to Lieutenant Fitzgerald's tanks, Lieutenant Madsen moved out together with Sergeant A. O. Lind in tanks 31 and 33. They were on their way to the hill by midnight on the first of June.

The section moved without difficulty until reaching the steep, final approach to the firing positions below the crest. There the platoon leader's tank encountered difficulty negotiating the terrain. Madsen dismounted, moved to tank 33 and continued the climb until he was in a position to cover the overrun tanks by fire. Tank 31 joined him shortly there-

after. The full status of Fitzgerald's three crews was unknown, but Madsen could observe that each tank was still firing though making no effort to pull back within friendly lines.

With this bolstering of the situation, an M-24, from the battalion reconnaissance platoon under command of Master Sergeant W. R. Moorehead, moved out from the company CP to make its way up the hill to recover wounded. As it headed for tank number 50 on the left side of Hill 812, unseen enemy troops threw antitank grenades at the light tank, which hit below the gun tube and split the turret, putting the tank out of action. Enemy fire concentrated on the disabled tank but the crew members were able to escape through a deserted communications trench and make their way to ROK positions further down the slope.

At first light on the second of June Lieut. Madsen took advantage of a lull in enemy fire and dismounted from his own tank to reconnoiter forward on foot to determine the status of tanks 48 and 49. As he approached the rearmost tank, number 48, he was brought under heavy small arms fire from enemy infantry entrenched on the high ground. Cut off from his own tank, he made his way safely to Lieut. Fitzgerald's command tank and climbed aboard. Finding the crew intact but learning that ROK medics had evacuated Lieut. Fitzgerald and his driver, he took command of the section, managed to establish radio communication with the company, and continued the fight. The tank, it developed, had thrown a track while maneuvering and was stranded in place, blocking tank 49 immediately ahead. A fire, from an incendiary grenade, had disabled the engine of tank 50 and though it had been extinguished by the fixed extinguishers, it was impossible for the driver to start the engine and it, too, could not be pulled back to within friendly lines.

Lieut. Madsen radioed his own tanks, numbers 31 and 33, to remain in position and cover the three tanks on the hill. ROK infantrymen had not yet mounted a counterattack, so the tanks alone were holding the enemy at bay. Madsen was to remain in this completely exposed and cut-off position with the survivors of the original crews for 36 hours. During this time he expended all available

ammunition and prevented exploitation of the enemy's successes, in addition to supporting subsequent ROK counterattacks. He was able to regain radio contact with the company and maintain it until about 0400 hours on the third of June when, because of weakened batteries, the radio faded and finally ceased to operate.

When it became apparent that friendly troops would be unable to retake Hill 812 in time to effect relief of the cut-off tankers, Captain Doherty decided to make a ground reconnaissance, his second since the fight started, of the 812 area. Not wishing to risk the possibility of blocking the narrow trail with a tank, he moved out in his jeep prior to dawn on the second of June and was able to drive through sporadic mortar fire to a position from which he could observe the engaged tanks and infantry. The enemy spotted the jeep almost immediately and took it under intense fire, forcing Captain Doherty to move back. He had been able to obtain an accurate picture of the situation, however, which supplemented what he had been able to learn from the crews of tanks 31 and 33.

Returning to the CP, Captain Doherty briefed the battalion commander who had come forward. The two officers moved out for a further reconnaissance which took them first to a position south of Hill 812 and then to an OP on Hill 770. It overlooked the reverse slope and positions on 812 and gave a vantage point from which they could observe movement on the crest with the bulk of the enemy artillery fire falling south of Hill 812. It was evident that the enemy was well dug-in, having taken over the former ROK bunkers.

Working with the US advisors to the ROK units, Colonel Fondren and Captain Doherty planned a counterattack to retake 812. It involved ROK infantry attacking along the upper and lower ridges while a new tank section moved abreast of the attacking elements along the tank trail. The new section would replace tanks 31 and 33 on the firing positions and then support the final assault on 812 at a range from 200 to 300 yards. In addition, fire plans utilizing tanks on Hills 770 and 755, and the artillery were prepared. Lieut. L. H. Jacobs was put in command of the tank section to make the assault.

The attack against the enemy battalion on the hill jumped off in the late afternoon of the second of June and initial progress was encouraging. The enemy hurled heavy mortar and artillery fire, and as the North Koreans emerged to battle the advancing ROK's, the tanks poured their fire into the trenches inflicting heavy casualties. Working forward, the ROK's moved onto the left portion of the hill before a costly Red counterattack forced them back to positions approximately on line with the tanks. There they dug in and stood firm.

In the course of the counterattack and subsequent actions on the second of June, Lieut. Jacobs' tank threw a track on the steep slopes of the hill and the track had become wedged between the hull and the bogies so as to make impossible any on-the-spot repair. The risk of attempting it was too great under continuous enemy fire so Captain Doherty ordered a new section to be sent forward before nightfall.

Since all of Company B's tanks had been committed, either on 812 or on adjacent hills, a platoon from Captain R. G. Harney's Company C was alerted to replace Jacobs' tanks and to set up blocking positions below Hill 812 in event of further enemy penetrations. Lieut. R. J. Kidwell reported to Captain Doherty's CP at

1700 hours. Less than an hour later he had gone forward with two tanks to relieve Lieut. Jacobs' section.

Meanwhile, Lieut. Madsen and the survivors of the original tanks on Hill 812 were still holding out. Ammunition was practically exhausted; batteries were weakened almost beyond use; only one radio was in operation and it was fading out. Only the fire cover provided by the artillery and the tanks prevented the Reds from making a successful assault on the marooned men.

When Lieut. Kidwell's tanks from Company C joined Lieut. Jacobs' tanks the ROK's were making another effort to move up onto Hill 812. Meanwhile, an M-46 under command of Sergeant First Class J. C. Wright arrived on the hill from the company area with the mission of attempting to rescue some of the men stranded with Madsen. Utilizing the protection afforded by the fire support for the ROK attack, Sergeant Wright drove directly up beside tank number 50 and after attracting the attention of the men inside, opened his escape hatch and proceeded to bring all five crew members into his own tank. It was impossible for Wright to direct the descent of the tank from within the crowded turret, so without hesitation he crawled outside the turret and guided his driver to safety.



Photo—U.S. Army
"Luke's Castle," the rocky mass directly over the muzzle brake, viewed from 755.

Miraculously he escaped being wounded or killed. As he pulled off the crest he saw two additional men on the hill but was unable to take them aboard for the enemy troops had already directed streams of small arms at the tank. When he passed through Lieut. Jacobs' position he saw that the one operating tank in the section had not started down the hill, so he told the tank commander, SFC H. W. Culbertson, about the two stranded men. Sergeant Culbertson took his tank up to the location given him by Sergeant Wright and took the two men safely aboard. In this manner, seven of the men on the hill were pulled out.

Another rescue operation was undertaken shortly after Wright and Culbertson returned. Lieutenant Sam Stieger, who replaced Fitzgerald in the company upon the latter's evacuation, took a tank dozer and with a two-man crew moved out to retrieve Lieut. Jacobs and crew. It was impossible to repair or recover the disabled tank and the threat was still grave that the position might be overrun. Unwilling to risk a crew in a disabled tank, Captain Doherty gave permission to Stieger to make the rescue attempt. Although he encountered difficulty in maneuvering into position near Jacobs' tank, Stieger was able to accomplish his mission although he was wounded in the process.

Lieut. Madsen was still on the enemy-controlled crest the evening of the fourth of June with the remainder of the crews from tanks 48 and 49. Inasmuch as he was without ammunition and out of radio contact, he decided it was useless to risk staying with the tanks any longer since none of the men had been able to sleep since they were cut off three days ago. Knowing that any escape would necessitate moving through at least 300 yards of enemy controlled ground, he told the men he would go out through the escape hatch, attempt to find a safe way down, and then, if successful, see that they were guided along the same route. At 1700 hours he made his move. Lowering the hatch, he crawled out, eased along the ground and dropped into a communications trench. Exploring stealthily, he found it unoccupied and following it downward he made his way into friendly positions. Another lieu-

tenant from Company B, Lieut. H. Frazer, said he knew of the trench which Madsen had used and he volunteered to return and guide the crewmen to safety. Permission was granted and Frazer successfully made his round trip, leading the men to friendly positions from the tanks in which they had been isolated for three days and nights.

At 0230 hours on the fifth of June, the ROK Division Commander ordered his units on the upper ridge to pull back to better positions and at the same time requested the Battalion Commander to have his tanks on Hill 812 pull back and tie in with the new flank of the infantry although at the time the tanks were in no immediate danger.

When the battle on Hill 812 developed on the first of June, Company A, commanded by Captain Geo. S. Patton, had been undergoing training at the 40th Division tank training area, situated 35 miles south of the tank battalion CP. As the action grew in intensity, Company A was alerted for possible commitment, and at 1425 hours on the second of June was ordered to move north to the area of the tank battalion trains. Five minutes later the first tank crossed the IP and at 2025 hours, after negotiating two long, steep mountain passes, the company closed into the designated area with all of its original tanks.

Captain Patton spent all of the third of June and the morning of the fourth preparing counterattack plans. At noon on the fourth he received orders to move forward and relieve Company B. By evening the relief was complete, with two tanks on Hill 770, two on a hill south of 770, four on 755, and three in firing positions on line with the adjusted ROK front where they relieved Lieut. Kidwell's three tanks from Company C.

The night of the fourth and the daylight hours of the fifth were relatively quiet with only moderate incoming artillery. But at 2200 hours on the fifth the enemy struck again. His attacks were preceded by another heavy artillery and mortar preparation.

The North Korean assault struck in two directions. One thrust was south along a finger leading to the ROK Ninth Company positions on the upper ridge. The other was aimed

at Hill 770 along the ridge leading down from Hill 812. Initial successes were made by each. The Reds were able to come up to the edge of the trenches on Hill 770, and they made a special effort to knock out the tanks on that position. Shortly after the attack began, Lieut. B. B. Nichol, platoon leader on Hill 770, radioed Captain Patton that one tank had been hit on the left of the hill.

On the embattled crest, tank number 10 was in critical danger. The hit it had received had wounded the gunner and bow gunner and had started a gasoline fire which could not be extinguished. When it became apparent that the fire was out of control, the tank commander, Sergeant Frederick Douglas, ordered the tank abandoned although it meant that the crew would have to leave the tank during an intense fire fight. After passing the word to leave, Sergeant Douglas got down in the turret and aided the wounded gunner to crawl through the hatch and get down onto the ground. Supporting the gunner with one arm, Douglas called to the crew crouched near the tank to follow him off the exposed position. When he got down to a place of relative safety he discovered that the bow gunner was not among those who had come down from the tank. Although enemy fire churned the ground on all sides, he ran to the tank of the platoon leader, crawled up and reported what had happened. Lieut. Nichol informed Captain Patton by radio and stated he was going up to attempt to get the missing man.

Dismounting and moving forward with Douglas, Lieut. Nichol reached the burning tank. Thinking the bow gunner might have tried to get out through the escape hatch, Nichol crawled under the tank and inched his way forward only to find the hatch securely in place. Crawling out, he ordered Douglas to return to his crew and find cover. Then, ignoring enemy small arms fire which ricocheted off the tank, he hurled himself up over the engine compartment and looked down into the tank commander's hatch. Small arms ammunition inside the tank was beginning to explode as the fire increased in intensity. Unable to enter the turret, Nichol crawled outside the turret and looked into the open driver's hatch but could see no sign of the bow gunner.

Flames almost completely filled the compartment. Then, although he was in full view of enemy troops assaulting a trench less than 15 yards away, he leaped over to the closed bow gunner's hatch and with his trench knife managed to pry between the hatch and the hull and force the hatch open. A fire was raging inside and the small arms ammunition was exploding with such fury that it was obvious the man could not have survived. Knowing that the 90mm ammunition would explode at any minute, Nichol vaulted off the tank and sprinted down from the position just as thunderous explosions ripped the doomed tank, shooting geysers of yellow flame high into the air. Although the air was filled with exploding ammunition and enemy fire, Nichol safely made his way back to his own tank where, once within the turret, he radioed a full report to the Company CP.

Another report was being received by Captain Patton at the same time when the US advisor to the ROK supporting artillery radioed that he believed the three tanks in the valley below Hill 812 had been cut off when the enemy attack on the ROK Ninth Company on the upper ridge had succeeded in overrunning the positions. The Company Commander had been in constant radio contact with his platoon leader on the position, Lieut. G. P. Wright, and he was certain the report was in error. Not wanting to pass on information which was in doubt, he radioed Wright to be particularly attentive to his rear area as the enemy had made penetrations in that area. Wright receipted for the transmission and reported the entire area was under extremely heavy fire from 122mm howitzers and 120mm mortars. Withdrawing ROK soldiers were falling back onto his position and digging in on his flanks.

The enemy failed to follow up on his penetrations and move down the tank trail, and at daybreak on the sixth of June the tank positions were secure. A penetration east of Hill 812 had been contained in the vicinity of the ROK Ninth Company, and Hill 770 was still in friendly hands. Heavy fighting continued throughout the day and night and into the morning of the seventh of June, but no significant changes in the line occurred.

The positions held by Lieut. Wright

below the crest of Hill 812 were restricted and afforded extremely limited fields of fire. Accordingly, Colonel Fondren permitted Captain Patton to withdraw, after having received concurrence from the infantry who moved up to fill the gap.

Plans for a counterattack to restore the penetrated lines between Hills 812 and 755 were now being prepared. The Battalion Commander, his operations officer, and the Company Commander arrived at the ROK Division CP at 0930 hours and by 1230 hours they were on their way back to the front with the complete plan of attack. The attack was slated to jump off at 1400 hours, so there was a minimum of time in which to brief the tankers on their role.

At his CP, Captain Patton picked up one enlisted man and two officers to assist him in briefing his crews and preparing the tanks for the counterattack. Since the tanks on Hill 770 were to support the attack by area fire, he briefed them in the clear by radio. Those on Hill 755 were to furnish the close support to the assaulting troops, and Patton wanted to insure that each crew was briefed individually and that all radios were in good working order. Traveling in two jeeps, the party made its way up the steep trail which climbed and then skirted behind the Hill 755 complex. Lieut. J. E. Morgan was to assist Patton in personally going to each tank to outline the plan of attack and the tank support role. Lieut. R. H. Knight and Corporal D. G. McDonald, a radio repairman, were to check each tank to inspect the radios.

The preparation fires were already being unleashed by the time Lieut. Knight and Cpl. McDonald completed their last radio check. As they mounted their jeep an enemy artillery shell hit a bank directly to their front hurling fragments into the jeep. Lieut. Knight was seriously wounded and both McDonald and the driver received disabling wounds while the jeep was demolished.

Nearby the Company Commander, disregarding the intense enemy shelling, moved from tank to tank directing the crews in pouring overwhelming fire into the enemy positions. One exploding mortar shell sent fragments plowing into his jeep, destroying one radio receiver but somehow missing both him and his driver. For five

hours the tanks slammed their fire over the heads of the ROK infantrymen who doggedly moved forward to engage the enemy in the trenches he had occupied. By 1900 hours the former ROK Ninth Company position had been recaptured and the ROK's, following through on their successes, moved down the finger which gave access to the position and occupied a major outpost—the key to the newly won height. Hill 812 was by this time a no-man's land, useless to the enemy and completely dominated by friendly fire.

The men of the 140th Tank Battalion had acquitted themselves well. Their stand prevented a major enemy breakthrough in the 812 sector and their destructive, accurate fire support enabled the ROK infantry to seal off a serious penetration of the MLR. Later intelligence revealed that a total of five enemy battalions had participated in the seven-day assault and an estimated 1,166 casualties had been inflicted on his forces.

Among the many teachings reaffirmed during the engagement perhaps none was more evident than the value of maintaining reliable communications. While telephone contact was wiped out during the first minutes of the attack and remained out a major portion of the time in spite of efforts by wire linemen, radio communications remained intact. With the one exception of the marooned tanks on the crest of Hill 812, where repair or replacement was impossible, there was no instance of prolonged radio failure. Double benefits accrued from this for on many occasions during the fight the tanks supplied the only link between ROK troops on the hill and the ROK Division headquarters.

The supply services of the tank battalion turned in magnificent performances. Although the entire road net from four miles south of the tank battalion CP was under constant fire from enemy artillery and mortars, truck drivers brought through thousands of rounds of ammunition, huge quantities of gasoline and other supplies.

Many instances of individual heroism undoubtedly went unrecorded during the action but the evidence is overwhelming that once again Armor has proved that any terrain anywhere is "tankers' country."

The eleventh of May, 1953, will long be remembered by the citizens of Waco, Texas. The ensuing few days endeared the military to the hearts of these people. The assistance rendered by the Air Force, Army and National Guard, alleviated a situation which could have become much more disastrous. If an ill wind can blow some good, it is believed that, in addition to cementing public relations, those who participated left with the feeling of a "job well-done" and "we really learned something useful in the event of a future emergency whether in war or peace."

CARDED

THE WACO DISASTER

by LT. COL. WM. L. STARNES, JR.

ON 11 May at 1645 hours the city of Waco, Texas, was struck by one of the most violent tornadoes in Texas history. In a few short minutes two square miles of the heart of the business district was left a mass of twisted rubble. Telephone and power lines were knocked down. Live wires popped and whipped like snakes in the wet debris of the littered streets. Automobiles were crushed and overturned and entire buildings fell into the streets.

A visitor from Hiroshima or Nagasaki would have thought the terrible "day of the bomb" had recurred. The citizens of Waco were momentarily stunned by the magnitude of the disaster that had overtaken their city. There had been tornado warnings earlier that day but there had been such warnings before and no

tornado had ever hit Waco. After all, there was an old Indian legend to the effect that "no high wind would ever visit Waco."

After the first few violent minutes a few brave souls began to poke into the ruins where cries for help indicated life. The movement grew as more persons came into the area. Contractors brought or sent engineering equipment and city officials began to rally their forces. Everyone and every organization that thought they could be of help began to converge upon the damaged area; and, failing to find any firm clear direction of effort, helped where they thought best or stood around waiting to be told where to help. Because of the heavy storm clouds night came early that evening, adding the confusion of darkness to the already unbelievable destruction of the storm.

A working force of men and equipment from James Connally Air Force Base under the direction of Major General G. P. Disosway arrived before nightfall and set up operations in the Amicable Building to work on the R. T. Dennis Furniture Store, a five story structure completely collapsed by the tornado with an appall-

ing loss of life. By the use of Air Police, National Guard and City Police, some semblance of order was established in this small area. Outside emergency lights were obtained for a small area of operations and a loudspeaker was set up to help control the job. As the evening wore on the crowd increased until more people were watching than were working. It was estimated that the crowd in and around this area numbered 10,000 persons.

It was this scene of large crowds, roaring machines, blaring loudspeakers, heartbreaking destruction, and debris-clogged streets, that confronted the rescue force of the 16th Armored Engineer Battalion when that unit moved into Waco at 0200 hours the 12th of May.

At about 2130 hours the evening before, the First Armored Division had been directed by Fourth Army to send a rescue force to Waco. At 2200 hours the Commanding Officer of the 16th Armored Engineer Battalion, the organic engineer battalion of the First Armored Division, received a verbal directive substantially as follows from Major General L. L. Doan, then Commanding General of the

LIEUTENANT COLONEL WILLIAM L. STARNES, JR., a 1943 graduate of West Point, served in Europe during World War II. Subsequently, he received his Master's degree from M. I. T. He commanded the 16th Armored Engineer Battalion at the time of the Waco disaster; he is presently the Commanding Officer of the Combat Engineer Detachment at the Military Academy.

"Old Ironsides" Division:

Organize a rescue force of approximately 100 workers with the necessary equipment and dump truck support from your battalion; move to Waco as soon as possible to assist in rescue operations; be prepared to stay three days.

Upon receipt of this directive, conversations were held with all general staff chiefs regarding the details pertaining to their field. A warning order had been received 30 minutes previous and the battalion commander had alerted his battalion and sent for his staff. At 2230 hours a battalion staff meeting was held and the necessary orders finalized to move the rescue force to Waco. "A" Company was designated as the operational unit since its trainees were further advanced (10 weeks) than the other units. H&S Company was given the mission to furnish support and equipment. The force as organized was a heavily reinforced armored engineer company to operate under battalion direction.

IP time for the first serial was set up at 2330 hours with the follow-up support serial at 2400 hours. Fragmentary orders and instructions were received up until departure time regarding additional equipment, and division support. The battalion executive officer was sent ahead of the convoy one half hour to contact the authorities in Waco, establish liaison, find a bivouac site, and reconnoiter the proposed operation.

At 2330 hours the first serial departed, followed at 2400 hours by the support and heavy equipment serial. In addition to the normal tools and equipment carried by combat engineers the force was augmented by 20 dump trucks, two $\frac{3}{4}$ yard truck mounted cranes, an air compressor, an extra field kitchen, an ordnance contact team, a ten ton wrecker, a $2\frac{1}{2}$ ton truck-mounted long range radio, 5 radio jeeps mounting the AN/GRC-3, and five $2\frac{1}{2}$ ton cargo trucks loaded with class I and III supplies.

The battalion executive officer met the battalion commander in McGregor, a small town outside of Waco, with the information that no one person or group seemed to be in charge in Waco, and that the condition of the city was much worse than had previously been reported. He advised reporting to the Texas Highway Patrol

upon arrival, to receive a mission, since this unit was organized and operating. The battalion executive had made arrangements for the use of the Baylor Football Stadium, located on the outskirts of town, for a bivouac site, which proved a most wise choice since adequate, undamaged facilities existed for both bivouac and support operations.

The battalion commander ordered the executive to take the task force to Baylor Stadium and to prepare for immediate movement of the operating troops into the city. The battalion commander reported to Captain Sam Gardner of the Texas Highway Patrol and received a request to clear the entire length of First Street so that debris hauling to the city dump could be expedited. It was evident at that time that there was no overall plan for coping with the disaster but that various agencies were working where they thought best.

Upon return to Baylor Stadium, orders were issued to half of the force to clear First Street, departing in 30 minutes. A detail was dispatched to help on the R. T. Dennis building and the remainder placed in reserve to relieve the working detail at 0600 hours. The administrative echelon set up the CP, opened the mess and established radio contact with Division.

The S3 and the Battalion Commander proceeded to the center of the city on a reconnaissance where the terrible scene described heretofore met the eye. The center of work was the Dennis Building; however, further reconnaissance indicated devastated areas, blocked streets and dangerous buildings which were completely untouched by rescue teams.

A central Disaster Headquarters was slowly forming at the First National Bank Building, headed by the Mayor, Ralph Wolff. The headquarters was not effectively operational and too few were attempting to direct too many without a clear knowledge of the situation. It was evident that no detailed direction could be expected from this organization for some time yet, therefore it was decided to go to work wherever the reconnaissance indicated work was required.

The most damaged area except for the Dennis Building was the square around the City Hall with its many old buildings. Therefore the Battalion

Commander decided to concentrate the battalion effort in that area after First Street was cleared—a two-hour job with men and equipment. The necessary orders to effect this decision were issued by radio. It was decided to work in shifts of four hours on and four hours off and, except for certain equipment operators and key supervisory personnel, this system was followed throughout the period.

The working party on First Street soon arrived at the City Hall where they were met by the command group. Previous orders had already brought to the area the available heavy equipment. The working parties with suitable equipment were assigned tasks and placed under the command of a junior officer. A shift boss was assigned to be in control of all work accomplished in the battalion area during a four-hour shift. This type of organization proved effective and was used during the entire period. The necessary administrative, supply and maintenance plans were executed to support the operational plan.

During this day, Tuesday, 12 May work proceeded as planned, however under the handicap of a terrible rain storm. As an aftermath of the tornado, at approximately 0800 hours on May 12th a cloudburst hit the city, which was to settle down into an extremely heavy rain lasting the entire week. The weather also turned cold which added to the difficulties of working in the open. This unseasonable weather and heavy rain soon ended all hopes of finding any more living survivors. No injured person could live long exposed to weather as violent as Waco was experiencing. The rains also raised the threat of floods to add to the damage, and the District Office of the Corps of Engineers kept close watch on the river stage to determine if it would be necessary to divert part of the rescue force to strengthening the levees.

Along with the difficulties attendant upon the rains and cold weather, some beneficial effects were evident. Without rain the dust from the clearing work in the demolished buildings would have been hazardous and uncomfortable to the workers. The weather also held down the usual stench that hangs over a disaster like this and probably suppressed any chance of an epidemic.

Late on Wednesday, 13 May, a



Photo—Windy Drum

A truck-mounted crane moves in to start work on storm-wrecked buildings.

general planning meeting was held by the Disaster Headquarters during which the city was divided into zones and certain organizations assigned specific responsibilities. The 16th Armored Engineer Battalion was assigned the 12 block area around the City Hall, where operations had been in progress for two and one-half days. Liaison plans were worked out with the Air Force contingent, the city clearing force, the National Guard and other agencies. A central control of equipment was set up to enable all equipment in the city to be utilized more efficiently. Order slowly emerged from chaos, and operations took on a professional, efficient air. From then until the battalion departed Waco at 1500 hours Friday 15 May no organizational difficulties were encountered and the rescue work proceeded twenty-four hours a day.

During the relatively short period of stay in Waco the 16th Armored Engineer Battalion Task Force, using its own and borrowed equipment, removed 26,000 cubic yards of rubble, drove a cumulative 20,000 miles, recovered 14 bodies, cleared 4 miles of city streets, wrecked 11 dangerous buildings, and performed other miscellaneous rescue and emergency missions. The experience gained by engineers of the "First" in accomplishing these rescue missions, while frightful in cost and human suffering to the civilian community, pointed

up certain facts which will be extremely valuable in other emergencies of a similar nature.

The comparison of this disaster and the destruction that might be wrought by an atomic bomb is too valid to be dismissed lightly. The end result of the Waco Tornado was probably a small scale replica of the destruction to be expected from an atomic bomb over an American city. Casualties, of course, were much lower and no fires were present to add to the destruction. However, even this small version practically

stopped the life of the city for some days. The disaster pointed out the need for plans to cope with such a situation by both military and civilian authorities. In spite of the fact that civil defense is mainly a civilian responsibility, the military must be prepared to advise and assist.

An armored division in a theater of operations is often found in reserve waiting to deliver the Corps Commander's Sunday Punch. An atomic bomb attack on a city within the Corps' or Army's area of responsibility might well find the armored division as the only source of troops available on instant call to cope with the disaster.

From a military point of view an atomic-bombed, large city in the rear of the front lines could seriously hamper the fighting effort. To mention a few of the important considerations—vital lines of communications pass through such cities, storage and manufacturing facilities exist ready made, control of civil populace in the surrounding area is usually seated in the city, and panic and epidemic would result if help were not forthcoming.

To help the commander reduce this threat to his rear, an Area Damage Control System has been devised, and, as taught at the Command and General Staff College, is sound and workable for a situation such as has been depicted. Engineer units, due to their equipment and training, are



Photo—U.S. Army

Army dump trucks makes quick work of clearing some of storm-caused debris.

particularly suited to such operations; however, any military unit with suitable engineer equipment and operators attached can do a creditable job.

The military unit which it is planned to utilize for such work should be so constituted that 24 hour a day operations are possible. This unit should be reinforced by communications and maintenance personnel of a higher echelon than is organic to it if the operation is some distance from the home station. More than the normal proportion of NCO's and officers to enlisted men is required due to the nature of the work encountered.

The type of engineer equipment found in an engineer battalion is adequate, such as bulldozers, cranes, dump trucks, bucket loaders, etc. However, the quantity taken should be limited only by availability of operators and equipment. Clamshell cranes are especially valuable and practically any number could have been used. Dump trucks are required in proportion to the loading equipment to haul debris away to some temporary dump. Engineer hand tools such as shovels, picks, wrecking bars, saws, etc., are required in large numbers to equip the labor force. Auxiliary lighting equipment is of the utmost importance since usually all available civilian generators will be used supplying emergency power for vital city installations, and night work can be



Men of the Sixteenth changing shifts in Waco, as they worked around the clock. Photo—Windy Drum

extremely hazardous without adequate lighting.

Good communications within the city and to the base station are vital. The radios, organic to almost any tactical unit in the Army, are excellent for this type of work. Augmentation of the number required would allow some flexibility and would at the same time be available for assisting any vital civilian organization that is without the proper type of communications.

A needed adjunct to the normal military communications not often

found in a tactical unit is a public address system. For control of the actual work site it is practically mandatory, if work is to progress safely and effectively, and if the volunteer civilian workers are to be given intelligent direction. The commander, by the use of a public address system, has increased his range of command and direction of work many times.

As a final observation, the military principles of prior reconnaissance and planning, sound organization of a job, timely maintenance of men and equipment, good communications and close liaison with adjacent units are as essential to this type of operation as to any other military operation. In this atomic world where we live, success in battle might well hinge upon success in this less spectacular field of Area Damage Control.

As the 16th Armored Engineer Battalion lined up their vehicles to return to Fort Hood on Friday 15 May, there was hardly a man among the approximately 200 officers and enlisted men who had participated who didn't breathe a prayer of thanksgiving that it was not his home town or his loved ones who had been visited by this most terrible of storms. The realization also that man was now able to compete with nature in destructive fury brought home to all the horror of atomic warfare and the necessity of planning and preparation in the event that such a catastrophe should ever overtake the world.



Third Street, Waco, after some emergency clearance work had been done. Photo—U.S. Army

Sum & Substance

A regular feature in ARMOR, where you may express your views in approximately 500 choice words—the effective medium between the letter and the article. This section is open to all on any subject within the bounds of propriety. Name and address must accompany all submissions. Name will be withheld upon request. No pseudonyms.

An Armored Cavalry Group is capable of forming an Armored Section for an Army or Corps Headquarters. It can supervise specialized armor-equipped units, or command a task force comparable to the strength of a Combat Command of an Armored Division. To obtain the answer in solving some of these complex problems, ARMOR has focussed the spotlight on the 19th Armored Cavalry Group stationed in Germany. This comparatively newly activated unit has been confronted with many situations which give ample opportunities for use of ingenuity, for the books are not available. Ed.

The writer of the following, a 1934 graduate of the United States Military Academy, served in the European Theater of Operations with the Sixth Armored Division during World War II. Prior to his present assignment as Commanding Officer of the 19th Armored Cavalry group he was assigned as Deputy of the Public Information Division, Headquarters, U. S. Army, Europe.

There are undoubtedly few officers or men in our Army today who have served with the Hq & Hq Co of what we now call an "Armored Cavalry Group." Therefore anyone receiving such an assignment is likely to find it a new experience, and will have many questions about the organization, missions, and operations of such a unit.

Without exception, the officers and men making up the Headquarters and Headquarters Company of the 19th Armored Cavalry Group, have lacked previous experience with this type organization. Consequently, there has been some groping and "feeling our way" in trying to establish clearly in the minds of all concerned just what the overall mission of the unit should contemplate; what tasks it should expect; how it should go about preparing for them; and how attached battalions should be trained for their roles as elements of the group.

Anyone whose duties require him to make a detailed examination of the "armored cavalry group" and its capabilities, is struck at once with the absence of published doctrine indicating the intended missions for such an organization, or the methods of em-

ployment considered most appropriate.

T/O & E 17-32, with changes (including T/O & E 17-32A, March, 1953) is the basis for organization of the group headquarters. This little Department of the Army publication sets up a strength in officers and men

All photos—U.S. Army



Colonel Brown

roughly one-half of that provided for an armored combat command headquarters, or for the headquarters of an armored cavalry regiment. It is considered significant that at reduced strength, the group headquarters is provided adequate staff personnel for S1, chaplain's, food service, and TI&E activities, while S2 is represented only by one enlisted space, and liaison personnel are entirely lacking. (One liaison officer and one S2 officer are provided at full strength.) This of course raises a question as to whether this type headquarters was not intended for normal employment in a

garrison situation, where attached units are conveniently close, and where the emphasis, so far as the group headquarters is concerned, is on training and administrative inspections, rather than field operations.

In our groping for background on "armored cavalry group" operations, we have come across one report indicating that during World War II, the so-called "tank groups" which were predecessors of our type unit, provided training supervision and control of tank battalions until the time of commitment to action, at which time the group headquarters relinquished control of the battalions and was itself employed thereafter largely in the role of an armor staff section at corps or army headquarters.

If this is historically correct, it is no doubt reflected in the statement of mission and capabilities as given in T/O & E 17-32. Here, the mission of an armored cavalry group headquarters is stated as, "command, control, and supervision of one or more separate tank battalions assigned to a corps or field army."

Among the listed capabilities which follow, the more significant are:

- a. Command, control, and supervision in combat of an armored task force comparable to a combat command for short periods.
- b. Command, control, and supervision of specialized armored equipment (flame-throwing, mine-exploding, and floated tanks, etc.) which may be assigned.
- c. Operation of armored-cavalry section of corps or field army headquarters when required.

The italicized portions of items a and b, above, suggest two of the many specific questions that arise in trying to visualize exactly what is intended as the role of this type headquarters. For example, what is meant by "command . . . in combat . . . for short periods"? Our field experience so far with the limited personnel authorized, and the requirement for 24-hours-a-day operation of radio nets, staff sections, etc., plus the requirement for local security at all times, leads us to an estimate of 3 to 5 days as the reasonable maximum period of sustained combat operations for this type headquarters, as presently manned and equipped. What would the 19th do if required to operate for a longer continuous period? Improvise, of course, and this covers a multitude of sins, all justified in the service of our country.

What is meant by "when required," in item c, above? When and under what conditions should the group headquarters furnish personnel and equipment to operate an armor section of corps or army headquarters? Under present noncombat conditions, the 19th has been of limited assistance to the corps staff with which we are associated, without serious detriment to the command responsibilities it has in connection with the presently attached tank and armored infantry battalions. Under combat conditions, it seems clear that the group headquarters could with relative ease assume command responsibility for an armored task force in active operations, or it could furnish an armor section of a higher headquarters, but it could hardly do both simultaneously unless additional personnel and some additional equipment were provided. Ideally, these two functions should be divorced.

Be that as it may, the 19th finds itself on duty in Germany, with the 510th, 322d, and 141st Tank Battalions, and the 373d Armored Infantry Battalion, attached. All of these units have had and will continue to receive good training experience in supporting roles, attached to the infantry regiments and divisions stationed in Germany.

The 19th Armored Cavalry Group headquarters, in addition to the normal week-in and week-out cycle of training inspections, tests, maneuvers, field exercises, etc., is gradually work-

ing to develop for itself and for its attached battalions, the capability of operating as an armored combined-arms team, highly mobile and flexible in composition, thus providing a readily available and relatively powerful armored striking force for rapid movement and employment over a wide area in a variety of possible situations.

Assignment to this type headquarters, especially in this theater, is one of the most interesting and professionally educational experiences open to officers of our branch.

COL. CHARLES E. BROWN

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The writer of the following, a 1950 graduate of Alabama Polytechnic Institute, received his commission in Armor. During World War II he served two years as an enlisted man in the Air Force in the European Theater of Operations. Prior to his present assignment as commanding officer of Headquarters & Headquarters Company he was assigned to the 40th Tank Battalion, 4th Infantry Division.

The Headquarters and Headquarters Company of an Armored Cavalry Group is organized under T O & E 17-32N w/changes. It is quite different in structure from the Headquarters and Service Company of a Tank Battalion. We do not have the men or equipment to warrant being a Headquarters, Headquarters and Service Company. This Company is organized to furnish mess, maintenance, communications, supply, and

administrative facilities for the small Group Headquarters. Our mission is primarily housekeeping and logistical support. It isn't as exciting as the mission of a line company, but the unusual problems that are constantly confronting each section of the company prevent the work from ever becoming monotonous.

All the officers and enlisted men of the Group Headquarters Staff Sections are a part of the Headquarters and Headquarters Company. Since this is a separate company our responsibilities include taking care of all matters of an administrative nature for all personnel assigned to the Group. We have our own personnel section which handles all the records. Another part of our job is to supply all the items which are required for the performance of the Group mission. Being a separate company, we deal with agents of all the Technical Services. This increases our problems since the supply personnel must be away from the company a great deal of the time. This makes our supply much more complex than dealing with a Battalion S4 as in the case of line companies.

The major problem encountered in the Armored Cavalry Group Headquarters Company is the lack of personnel to get all the various details performed outside the normal job that each man is assigned. The Company consists primarily of specialists and many times these people must be away from their jobs in Group Headquarters in order to maintain our vehicles and equipment in a state of combat readiness. The authorized strength of the Company is 50 men and 9 officers including a Chaplain. Our present mission is to maintain a Combat Command type of headquarters as well as to operate the Armor Section of V Corps Headquarters. In order that the Group Commander may "wear both hats," the company structure must be able to react very rapidly to developments generated at the Corps level, and a high degree of coordination is required between Group Staff and Company Headquarters.

Each man of the Headquarters Company must be proficient in several fields of work. A clerk in Group Headquarters may be called upon to be a messenger, driver, and radio operator all in one day. The non-com-



Lt. Ingram

missioned officers on the staff must have a considerable degree of training in intelligence and operations, in addition to a thorough knowledge of the fundamental tactics of Armor, Infantry, and Artillery. All members of the company, both officers and enlisted men, are cross-trained to insure that the company operates smoothly around the clock. We take pride in our ability to move efficiently and communicate effectively.

1ST LT. HAROLD C. INGRAM



The writer of the following served in the Pacific during World War II with the First Cavalry Division. Subsequent to the war and following a stateside assignment he returned to the First Cavalry Division in Japan. A tour with the Second Armored Division preceded his present assignment as S1 of the 19th Armored Cavalry Group.

Under the present organization of the 19th Armored Cavalry Group the functions of the S1 vary from actual S1 operations in the field to a role of administrative supervisor, personnel manager, and activities coordinator in garrison. The S1 is charged with the selection and procuring of qualified personnel to operate the Group Headquarters. He maintains a continuous survey of attached units in his role as an adviser to the Group Commander, insuring that critical specialists are evenly distributed throughout the Group.

The administrative relationship between the Group Headquarters and its attached battalions varies greatly with the type administration being processed and the headquarters from which the correspondence originated. Although most personnel matters from battalions are handled directly with the army headquarters, the proceedings of courts, boards and investigations are routed through the corps headquarters and often the Group headquarters. Battalion Commanders use Group channels for transfers and assignment of key officer personnel and for transfer or reassignment of groups of enlisted personnel.

Although the Group in the field is given combat command type missions, this similarity is not found in administrative procedures. The combat com-

mand does not mix in any way with the administration of its attached battalions. They deal directly with the Armored Division Headquarters. The Group Headquarters has no DAC to which it may send its personnel section or the personnel sections of its attached battalions but must, with the limited facilities at hand, and normally over long distances, control and supervise the many reports required in day-to-day operations in the field.

The S1 in the Armored Cavalry Group must become familiar with the inner workings of the Corps staff since the Group Commander is normally the Corps Armor officer. The S1 must be prepared to assist the Group Commander not only in his command capacity but also in those problems which result from his being a member of the Corps Staff.

Administrative channels for the Armored Cavalry Group in the field are normally from Group to Corps to Army. When the Group is attached to a Division the Division then becomes the first channel for most field reports and presents a staff level



Capt. Ackley

which is more easily reached by the Group Staff and with which more personal transactions can be made.

Because of frequent attachments and detachments to and from the Group in the field, it is not possible for the Group S1 to become too involved in Battalion administration. Consequently the relationship between the S1 and the attached Battalions will vary with the personality of the commander and the situation at hand.

CAPT. JOHN M. ACKLEY

The writer of the following served in Europe during World War II with the 4th Cavalry Group. He received a battlefield commission and was awarded the Distinguished Service Cross and Silver Star while serving as a Second Lieutenant in the Hurtgen Forest. He is presently assigned as S4 of the 19th Armored Cavalry Group.

The Armored Cavalry Group commander is assisted in supply functions by the supply and evacuation personnel of the staff. This consists of an S4, a supply sergeant, and a Food Service Warrant Officer with two enlisted assistants. The Group supply section acts in an advisory capacity, coordinating supply, maintenance and evacuation functions between higher headquarters and armored cavalry group elements.

Successful operation of the group is dependent upon adequate and timely supply. Because of the high consumption rate, emphasis is placed on the resupply of fuel and lubricants, ammunition, and spare parts. These must be provided in a steady stream if armored cavalry is to roll, shoot, and communicate.

In order to retain flexibility of organization and facilitate attachment and release, subordinate unit supply requests are not consolidated by the Group S4. He is not an operator in the supply chain, nor does he have the logistical means to receive or issue supplies to the battalions. All battalion reports are normally channeled direct to division and army installations, with information copies being retained by the Group S4.

The armored cavalry group headquarters contains the necessary command and staff personnel for command and control of a tactical grouping of combined arms. It is completely mobile, with all personnel and equipment habitually mounted or transported in organic wheeled vehicles. Each battalion normally attached is organized for independent administrative operation, and is capable of supporting itself with resupply of fuel, lubricants, ammunition, rations, and water for organic and attached elements.

Field and combat trains are retained under the control of each battalion and include operating personnel to perform the functions of supply, main-



Capt. Grotelueschen

tenance, and evacuation. The battalion combat trains normally consist of the major elements of the battalion maintenance platoon and the battalion medical detachment, and those ammunition and fuel and lubricant vehicles of the battalion supply platoon required for the immediate support of combat operations.

The battalion field trains consist of those vehicles not required for the immediate support of combat operations, and generally include kitchen, ration, water, and equipment and administrative trucks. Normally they will include fuel and lubricant trucks, and ammunition trucks not required in the battalion combat trains. A small part of the battalion maintenance platoon, such as 2½ ton trucks, and a small part of the battalion medical detachment, such as the ¾ ton ambulance, may be left with the battalion field trains.

When the group is attached to a division, battalion resupply vehicles proceed directly to division supply installations. When operating directly under corps control, the battalion is resupplied from army installations. In the latter case there is a considerable distance for the resupply vehicles to travel, often as great as 100 miles.

In the European theater of operations the day-to-day supply operations are far from routine, and there is vigorous competition among the top-notch units seeking the best logistic support. This group has been fortunate enough to obtain early this year the equipment necessary to become operational, although even now, six months after activation, some major items of equipment have not been

issued by the various technical services, due to non-availability.

CAPT. EDGAR W. GROTELUESCHEN



The writer of the following served in the European Theater of Operations during World War II with the 741st Tank Battalion. Prior to his present assignment as Communications Officer of the 19th Armored Cavalry Group he served with the 2d Armored Cavalry Regiment.

When I reported for duty as communications officer of the 19th Armored Cavalry Group shortly after it was activated, I was dismayed to learn that the group with a combat command type of mission was authorized a communications section of only seventeen enlisted men and was to be equipped with just eight FM radios (infantry series) and three SCR 506 radios. The seventeen-man communications section is broken down as follows:

- 1—communications chief
- 4—CW radio operators
- 5—wiremen
- 2—code clerks
- 2—motor messengers
- 2—armored utility vehicle drivers
- 1—radio mechanic

The first several months of training were spent mostly in the garrison, and I concentrated on 24-hour-a-day radio operation for the CW operators, and on-the-job training for the wiremen, who were basically armored cavalry crewmen and unskilled wiremen.

As training progressed and the group participated in field exercises and special operations, it became apparent that more CW radio operators were needed and that the wire personnel were not fully employed in the field. Hence, steps were taken to train the wiremen as CW radio operators so that they could augment the TO&E CW radio operators. This training is in progress now.

Field work also proved the necessity of having FM radios of the armored series in the group, for in our short existence I have been called on to arrange for voice radio contact with separate armored field artillery battalions, a separate armored infantry battalion, an armored cavalry reconnaissance battalion, and units of the 2d Armored Division. All these

units are equipped with the armored series of FM radios and as the group is equipped with the infantry series of FM radios no voice (FM) communications can be established. The group has requested on EML three AN/VRQ-1 FM radios (armored series) to be mounted in ¼ ton trucks for communications with units that have the armored series of radios. The group presently has three heavy tank battalions attached and as these units have the infantry series of FM radios and as elements of the group often work with units of the US infantry divisions, it is mandatory that the group be equipped with both the infantry and armored series of FM radios.

The requirement of having both voice and CW communications at air distances of more than 100 miles during field operations presented a communications problem that could not be met with the group's SCR 506 radios. This problem was solved by the corps signal battalion supporting the group with VHF teams and AN/GRC-26 or SCR 399 radio teams. The group has requested five SCR 399 radios on EML and a personnel augmentation of CW radio operators to operate these radios in order to have positive communications over extended distances to both higher and lower headquarters in future training and field operations. One or two of these SCR 399 radios would operate in the higher headquarters radio nets and one would operate as NCS of the group's CW command radio net. The two remaining sets would be kept as group reserve and would be used as the tactical situation dictates. For example, if one of the group's sub-



Maj. Sterrett

ordinate units was operating out of range of the SCR 506 radios, as is presently the case, one of the reserve SCR 399 radio trucks complete with radio operators would be attached to the unit.

Signal maintenance for the group and its attached units is efficient in Germany, as there are Seventh Army signal repair teams located with the ordnance companies which support the Seventh Army tactical units.

Positive radio communication is absolutely necessary for an armored commander to have control of his units. In order for the Armored Cavalry Group commander to have this positive radio communication the group needs FM radios of both the armored and infantry series for voice communications with subordinate units in addition to the SCR 399 radios for CW or voice communication over extended distances to both higher and lower headquarters.

MAJ. JOHN D. STERRETT

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The following article represents a composite summary of the views of the four battalion commanders (three Tank Battalions and one Armored Infantry Battalion) presently attached to the 19th Armored Cavalry Group. They were asked to discuss the significance, to them, of being attached to the group as compared with their normal status prior to activation of the 19th Armored Cavalry Group.

We four battalions attached to the only Armored Cavalry Group in Europe have much to say for the feasibility of having such a group to herd our so-called "loose" or separate battalions. Prior to the February 1953 activation of the 19th Armored Cavalry Group here in Germany our three tank and one armored infantry battalions in V Corps were separate in the true sense of the word with no intermediate headquarters between us and the corps headquarters. Understandably, considering the large number of units, including three divisions, reporting directly to corps, a separate battalion was far removed from much of the vitally needed and undeniably profitable supervision that higher headquarters normally can provide. Corps headquarters having had no armored section, the functions of coordination and supervision of training, allocation

of major training areas, school quotas, etc., for the separate battalions fell within the purview of the already busy corps G3 section. Now, with the activation of the 19th Armored Cavalry Group, the corps has gained not only an armored staff section but also the advantage of dealing with but one armored sub unit instead of four. This happy circumstance for the corps staff has been every bit as fortunate for the battalions themselves, inasmuch as it has removed some of the burden from their staffs. We battalions may now take our problems to the relatively small group headquarters where, being much closer to the group commander or staff officer concerned, they receive much more in the way of individual attention than heretofore.

From the standpoint of plans our problems are vastly simplified. Initially our staffs were required to spend long hours gleaning from the voluminous corps plans the bits that affected the battalions. Now that group headquarters has assumed this function and passes to the battalions only the information pertinent to their plans and operations, the battalion operations officer can devote the majority of his time to normal training.

The group with its attached units can be utilized very much like a combat command, can act as a sub headquarters for corps in controlling corps units temporarily attached, or can provide the control element under which to weld assault or reserve task force units. Naturally, we battalions

very much prefer the former. The group with its three heavy tank battalions and one armored infantry battalion constitutes a potent force and can acquit itself well on any assigned mission, but we like best to visualize ourselves as a powerful striking force held initially in reserve and used for the "Sunday punch" which so often provides the margin of victory.

Our major problem to date is communications. The present T/O & E for our separate tank battalions calls for radios on the infantry band while the T/O & E of our armored infantry battalion provides radios on the armor band, as is also the case with the units of the 2d Armored Division. This problem renders our getting together on the air a little difficult in combined training and certainly presents a potential hazard in battle whenever units on the armor band work with or are attached to those which are not. Our present, admittedly interim, solution is maximum utilization of CW common to all our units as well as dependence upon the common "B" set with its very limited range. Our recommended solution is the issue of enough armor sets to each battalion that the key sets within the unit may be switched when necessary. Although this problem is far from whipped, with what we have, we of the 19th Armored Cavalry Group are prepared to give a good account of ourselves as we are whether we are fighting as a group or as detached units.



Commanding Officers (L to R) Col. Brown—19th Group, Lt. Col. Boylston—510th Tank Battalion, Lt. Col. West—322d Tank Battalion, Lt. Col. Hansen—141st Tank Battalion, and Lt. Col. Colyer—373d Armored Infantry Battalion.

A Potential Team

History has proved to be most helpful to students of the military art and science in preparation for the future. We can rely on history to help establish principles. We can use these principles in future planning. We must supplement past experiences with a continual search for new ideas. For example, with the cessation of hostilities in Korea, armored officers can glean a great deal on infantry support in difficult terrain and in extreme cold, on gunnery, motor maintenance, communications and combat leadership. However, they will have to turn elsewhere to study armor's primary function—the title role in mobile warfare. They likewise will have to turn elsewhere to get data to study the proper utilization of tactical air, in combination with armor, guided missiles, atomic artillery and airborne infantry units. Similarly, tactical air officers will have to examine other sources to study close ground support in conjunction with fast-moving mobile spearheads. The airborne infantry officer can learn much from ground infantry tactics but will have to search further to determine what he can contribute to the mobile team. The tactical, guided missile or atomic artillery officer will have to visualize an entirely new role.

With the development of new weapons, which in some instances are not battle proved, new methods of employment at least must be considered even though later they may be rejected. To fail to explore all the facets of new tactical doctrine is sheer folly. To fail to capitalize on gains made possible by new weapons is unwise and uneconomical.

In order to provoke some thought on future aspects of warfare, which is one of the missions of ARMOR as an outlet for such expression by our readers, we would like to pose a hypothetical situation. Thus, we hope to invite constructive comments on the part of those readers who may be interested.

An Army commander, to accomplish an appropriate offensive mission, has at his disposal atomic artillery, airborne infantry, tactical air and armored units. What is the most economical method of employment to accomplish the assigned mission of effecting a saving in manpower, time and equipment? If you were the armored officer for this Army, what would you want to know in advance in order to advise the Army commander on the proper utilization of the armor at his disposal? And what would you ask the Army artillery officer concerning use of his tactical atomic artillery units in support of the attack? Conversely, what information could you give each specialist to assist him in his mission of advising the Army commander as to proper utilization? If you represented either the tactical air, airborne infantry or artillery units, what would you want to know about armor and what assistance could you render each other?

Let's move up to the front line units to see some of the problems which confront the unit commanders.

As an airborne infantry commander of a unit to be employed in the accomplishment of this mission, what would you want to know prior to the attack? What information concerning tactical air, guided missiles, atomic artillery and armor could you pass on to your subordinates?

As a division artillery officer, might you not inquire as to support expected from corps, and what is the possibility of utilizing the atomic shell?

As a squadron leader of a tactical air unit, wouldn't you desire information concerning the location of possible air drops and routes of approach for the armored units?

As a tank company commander in the lead company, what information would you want to receive from the commander of your combat command in respect to the other members of this team?

This should bring speculation from the technical services such as the Combat Engineers, Ordnance, Signal, and Chemical Corps as to how this team might affect their operations and what they might contribute in support.

These are but a few of many questions which undoubtedly would arise.

It appears on the surface, if we can propose a conjecture, that this team would be most effective. With tactical air and atomic artillery units supporting *massed* armored spearheads, and airborne infantry units properly meshed in, it is believed that the Army commander has at his disposal a modern force capable of accomplishing his mission with the maximum saving of time and the minimum expenditure of personnel and equipment.

ARMOR welcomes constructive articles intended to develop this idea: a team of *airborne infantry—tactical air—atomic artillery—armor*, forming a self-reliant striking force, yet mutually dependent upon one another, capable of rendering a quick decision when given an appropriate mission and objective.

RECOILLESS GUNS AND TANKS



by
RICHARD M. OGORKIEWICZ

The pros and cons of recoilless guns have been hashed over many times since they first made their appearance on the battlefield early in World War II. In fact the Russians used them

OF the many weapons developed during the course of World War II few have attracted as much attention as recoilless guns. Fewer still have made such an impression on all the post-war thinking on the subject of armor.

The impact of recoilless weapons on military thinking has, on the whole, been to the detriment of the tank. Opinions have been voiced in many quarters that the introduction of recoilless guns has greatly reduced the effectiveness of tanks. More than

that, one has only to recall the statement made shortly before the Korean aggression by the then Secretary of the Army to show how far some of these views went: "... tank warfare as we have known it will soon be obsolete!"

The causes of this are not far to seek. Recoilless guns have been developed largely to increase the organic fire power of the infantry; to provide infantry units with more powerful, yet handier, weapons than those which they hitherto possessed. This they have accomplished. They have increased the fire power of the infantry and its ability to engage several types of targets, including armored vehicles. These facts can hardly be questioned. But the conclusions which have been drawn from them are very questionable.

Erroneous Conclusions

First, there is the "devastating"—to quote a senior ordnance officer—performance of recoilless guns. It is "devastating" indeed, compared with earlier types of infantry weapons. But, as far as the target effect is concerned, it is no more so than the performance of field artillery and tank guns, which have been in use for some time. Unfortunately this fact is often forgotten and quite erroneous conclusions are drawn as to the on-target effect of recoilless weapons.

Secondly, there is the more general question of armor-piercing weapons and the validity of the argument that tanks are rendered obsolete because their armor can be penetrated. Such an argument, if it were true, would mean that tanks have hitherto been invulnerable—which, of course, they

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never were. So, on that score alone, the argument is false. Moreover, armor protection is not the tank's only or even chief attribute, though, unfortunately, there are still many who are under that illusion. Thus, whether the armor can be penetrated or not, the question of the tank becoming outdated does not really arise. It is the thinking attaching such importance to armor protection which is hopelessly outdated.

Need for Analysis

Confused thinking must not, however, be allowed to obscure the real value of recoilless weapons, any more than their limitation. It makes it all the more important to examine them carefully; to attempt a close and objective analysis of the characteristics of recoilless guns and of their possibilities in other than infantry roles. They have already a fairly wide background of development, which deserves some attention, and which is also interesting in illustrating the progress made in this field since the first guns were introduced.

German Development

The first German recoilless guns were produced for airborne troops, where their light weight and ease of dropping by parachute fitted them well. They were first used, appropriately enough, during the German attack on Crete, in May 1941, the first large scale operation ever to have been carried out almost exclusively by airborne forces.

The first type to be produced was a short 75mm gun, mounted on a light wheeled carriage. Like all subsequent recoilless weapons it balanced the recoil forces by allowing a portion of the propellant gases to escape to the rear through a nozzle, these escaping gases acting in much the same way as the counter-projectile of the Davis gun. This nozzle assembly replaced the conventional breech block and the cartridge cases were provided with a plastic base which disintegrated on firing but which was sufficiently robust to allow an initial pressure built up for shot propulsion.

After the 7.5cm L.G.40 proved itself in the hands of the German

fense gun and included several self-propelled versions.

Except for the 75mm and 105mm guns, most of the German recoilless weapons were still in an experimental stage when the war in Europe ended, and were not battle tested. In the meantime, however, work was begun in the United States and the first few recoilless rifles were built in time to be used in action in the closing stages of the war.

U. S. Development

Work on recoilless guns in the United States commenced in June 1943, at the Frankford Arsenal, the original intention being to develop a light weapon which could be fired from the shoulder. This led to the adoption of a 57mm tube and the design of the 57mm recoilless rifle, T15—now M18. After pilot models were successfully demonstrated the Infantry, early in 1944, recommended the development of a second and larger recoilless rifle which has since become the 75mm M20.

Early in 1945 small numbers of both

against the Finns during the Winter War of 1939-1940. For a history of their background and some sound conclusions based on analytical studies a perusal of this article is in order.

The first successful application of recoilless guns, as they are known today, was in Germany, where experiments begun as early as 1937. Some attempts at producing recoilless weapons had been made earlier, notably with the Davis gun of World War I, which was manufactured in the United States and mounted on a few large British airplanes. This fired projectiles in opposite directions with the same propellant charge: one was the actual projectile and the other a counterweight by means of which recoil forces were balanced.

The Russians appear to have done some early work also: a specimen was captured by the Finns during the "Winter War" of 1939-1940, but recoilless guns do not appear to have been used later on the Eastern Front against the Germans.

airborne troops it was issued and used successfully by mountain troops and infantry units. It was found particularly useful by the units operating in Finland, where it could be carried to positions where it was impossible to take heavier types of weapons.

More than one type of 75mm gun was actually built and it was followed closely by 105mm models, which were also originally intended for airborne troops but which were used by others as well. Both types, the 75mm and the 105mm, were in service in some numbers by 1943 and were encountered by Allied troops in Italy.

Other types were also under development, fairly high priority being given to this until the middle of 1944. By 1945 the range of models stretched from a 55mm automatic aircraft cannon to a 280mm coast de-

57 and 75mm rifles were flown out to the main theaters of operations. In Europe they were employed successfully in the final offensive in Germany and, like the first German recoilless guns, were used initially by parachute troops, of the 17th Airborne Division. A little later they showed equally well in the Pacific, during the fighting on Okinawa.

Since World War II recoilless rifles have, of course, become standard equipment, partly as a replacement of conventional support and antitank guns: three 57mm rifles to each infantry company and four 75mm rifles to each infantry battalion. There is hardly any need to add that more recently they have demonstrated their value as infantry weapons in Korea and have been supplemented by a third and still larger model, the

105mm recoilless rifle, four of which are now allotted to each infantry battalion.

Other countries too have been developing and introducing recoilless guns. In France, for instance, details have been released of a 75mm recoilless rifle, one version of which is mounted on a light Hotchkiss tracked carrier. The British Army too has been experimenting with recoilless weapons for some time. Recently it has been announced that a new recoilless gun, the 120mm BAT, will replace the high velocity 17 pounders (3 inch guns) as standard, infantry

with the infantry, for it enables the fire power of heavy weapons to be carried well forward and used in conjunction with small infantry units.

This last process of distributing heavy weapons among infantry units, has been going on for some time, much longer than the development of recoilless weapons. It is, in fact, part of a much more general trend towards increased employment of heavy, crew-operated weapons, instead of individual ones, which has been going on for over a century. The Germans were among its earliest exponents when, some time before

amount of propellant used by recoilless guns compared with that used by conventional guns of similar performance.

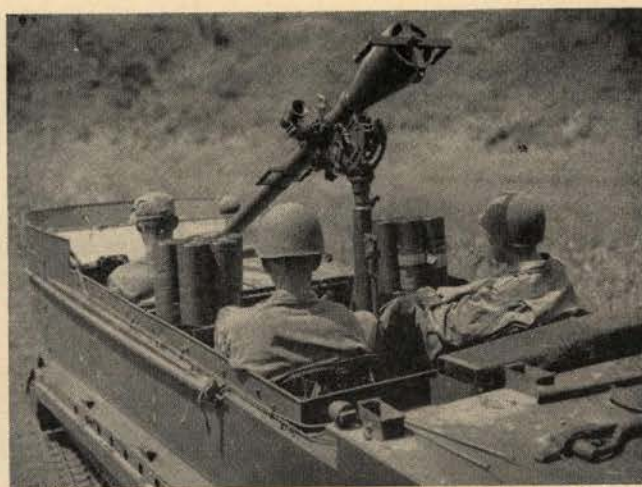
For example, a typical recoilless gun may use four or five times as much propellant as a conventional gun of the same performance. This ratio will, of course, vary somewhat with the type of gun; in general, the higher the chamber pressure and muzzle velocity the greater the relative inefficiency of the recoilless gun.

The high powder consumption of all recoilless guns brings in several serious disadvantages, from heavier



U.S. Army

The US 105mm recoilless gun, mounted on a ¼-ton vehicle, allows additional mobility but without armor protection.



U.S. Army

The US 75mm gun, on a weasel, has the advantage of a full-tracked vehicle. Its limitations are those of the vehicle.

battalion antitank weapons.

Light Weight

The success of recoilless guns to date must, in the first instance, be ascribed to their light weight. By virtue of the fact that the recoil forces are balanced a very much lighter piece can be constructed; one whose weight is largely confined to the tube; which can fire projectiles comparable with those used by field artillery and yet remain portable or, at any rate, capable of being mounted on a very light carriage. Small wonder that it has been dubbed "hand carried artillery."

The lightness of the piece explains the success and popularity of recoilless rifles with airborne troops, with whom weight is always a major problem. It also largely explains its success

World War II, they provided their infantry regiments and battalions with light infantry howitzers. So were the Japanese with their ultra-light 70mm battalion howitzers.

It is within this trend that much of the general development of recoilless guns falls, a trend which they accelerated considerably.

Powder Consumption

The advantages of light weight and of the resultant mobility of the piece have to be paid for, however. The price is powder consumption.

When a round is fired only a small portion of the gases does work on the projectile: the rest escape to the rear. The latter is responsible for giving the gun its recoilless characteristics but it is also responsible for the large

and more bulky ammunition, through transport and storage problems, right back to the cost of manufacture and the question of raw materials. The price paid for the lightness of the piece with reference to the ammunition problem is, therefore, quite high. It limits severely the scope of recoilless guns and makes it unlikely that they will supersede conventional guns in general use. It also restricts their application to such roles where a high muzzle velocity and hence a high chamber pressure are not required.

Infantry guns, of course, fall into the latter category. A relatively low muzzle velocity is adequate for support guns firing high explosive shells. But, important as the development of infantry support guns and the contribution made to this by recoilless

guns are, the importance of the latter would have been far less were it not for another development. A development which produced a projectile whose armor penetration did not depend upon its velocity—in other words, the development of the shaped charge.

Shaped Charge Projectiles

The development of the shaped, or hollow, charge projectile may, like that of the recoilless gun, be traced back a number of years. But its practical application only began in the middle of World War II: among the

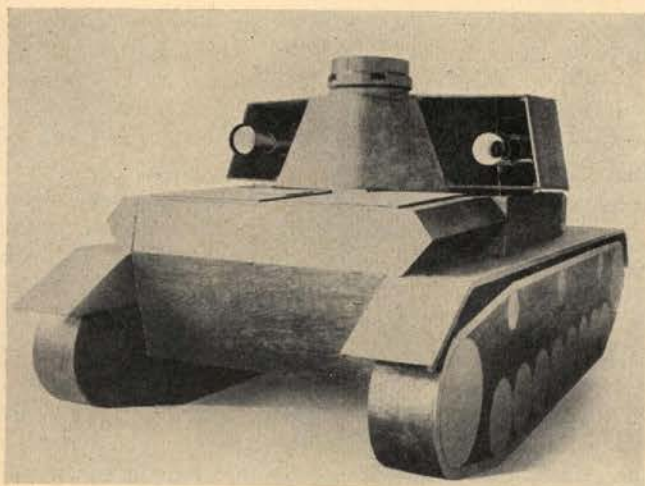
little later similar German weapons did the same against American and British tanks. These weapons were the 8.8cm *Raketenschuss* (or, more commonly, *Ofenrohr*), a copy of the U. S. bazooka, or the single shot *Panzerfaust*—an individual, short-range launcher with 4 or 6 inch diameter projectiles.

Almost simultaneously, shaped charge projectiles were also applied to other types of weapons, including rifle grenades and field artillery as well as recoilless guns.

So effective were all these weapons that many began to doubt the value of

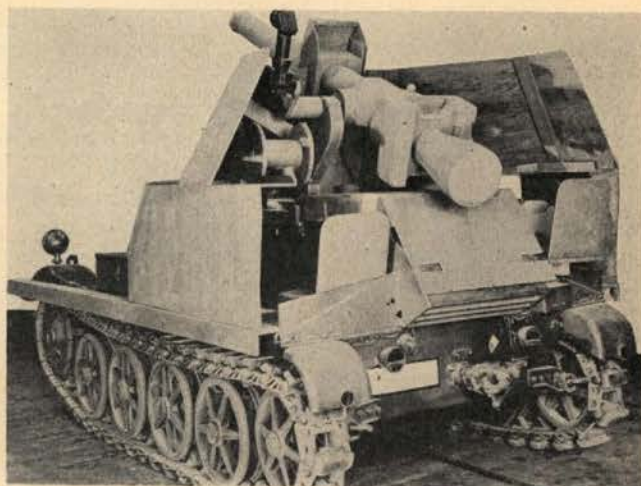
plified. It is this which has made the antitank rocket launcher and the antitank recoilless rifle, with all their advantages of lightness and mobility, possible.

As regards muzzle velocity, the lower it is the better is the performance of the hollow charge projectile, though, of course, a reasonable initial velocity is required to attain the necessary range and accuracy. In this last respect the recoilless gun is greatly superior to the rocket launcher, though again spin stabilization entails some loss of armor-piercing performance, compared with fin stabilized projec-



Courtesy of the Author

The German Pz. Kpfw. IV tank with two 75mm recoilless guns has armor protection and full-tracked mobility.



Courtesy of the Author

The German 105mm recoilless gun on a light Borgward carrier has frontal armor protection and full-tracked mobility.

earliest projectiles incorporating this feature were some German field artillery shells and the British No. 68 rifle grenade. The most effective and spectacular, however, was its use in the original U. S. bazooka, the 2.36 in., first used during the Allied landings in French North Africa in 1942.

The bazooka is in itself a recoilless weapon, though it is more properly classified with rocket launchers than with what are usually termed recoilless guns. Anyway, its lack of recoil and light weight combined with the performance of the shaped charge projectile provided the infantry with a highly effective short-range antitank weapon.

As such the bazooka demonstrated its power against German tanks in the Italian and French campaigns. A

tanks there and then. In fact, the menace of the shaped charge projectile was considered to be such that Hitler and his advisers began to doubt further value of tanks as early as 1942. Allied leaders and experts took much the same view immediately after the war and, unlike the others, have been slow in revising their first and unduly pessimistic impressions.

Armor Penetration

This is not to say that the menace of the shaped charge projectile to tanks is negligible. Since such projectiles rely on the focussed blast energy their target effect is substantially independent of velocity and range. And since armor penetration can be achieved without using a high muzzle velocity the gun design is greatly sim-

plified. But in both cases the low velocity remains a disadvantage as applied to accuracy.

In this respect, at least, the high velocity shot as fired from conventional type antitank or tank guns is bound to remain greatly superior to the shaped charge projectile. Regarding armor penetration itself the general opinion among those technically qualified to speak on this subject seems to be that the high velocity, high density shot will also, in the long run, remain the more dangerous.

It is also well to remember that some of the current performance of shaped charge projectiles may be misleading as a guide to the future. For one thing, the armored vehicles against which they have proved so

successful had all been designed before shaped charge projectiles were known or seriously considered by the designers. They may no longer be so when greater consideration is given in future tank design to them. Spaced armor, to mention but one possible approach, had proved effective on some German vehicles but so far about the only other application has been to the suspension protecting plates of the British Centurion tank.

Large Caliber and Back Blast

Whatever the relative effectiveness of shaped charge and high velocity projectiles, to achieve penetration by blast energy a good deal of explosive is necessary and, hence, a heavy and large caliber projectile.

This dependence of armor-piercing performance on caliber is well illustrated by the general trend to larger caliber weapons: the replacement of the 2.36 inch bazooka by the current 3.5 inch model, the development of the 105mm recoilless gun to supplement the 75mm version which is now regarded effective only against lightly armored vehicles.

The necessity of going to large calibers means that the piece also becomes large and heavy and that the recoilless gun begins to lose some of its advantages of very light weight. For instance, the 75mm rifle at 103 lb weight, without mount, may truly

be called "hand carried artillery." But that no longer applies to the 105mm model which weighs some 365 lb and whose ammunition is proportionately heavier.

It thus becomes necessary to mount the gun on a towed carriage, or, to achieve maximum effectiveness, to mount it directly on a suitable vehicle—in other words, to make it into a self-propelled gun.

As the size of the gun increases, another problem, associated with recoilless equipment, becomes of increasing importance and also suggests self-propelled mounting: the problem of back blast.

Tactically the latter is the greatest drawback of all recoilless equipment. It is potentially lethal for some distance behind the weapon and thus considerable care must be taken in positioning a gun, so as not to endanger friendly troops or the gun crew. It makes the gun unsuitable for firing in confined spaces and makes concealment difficult by throwing up, as it often does, clouds of smoke and dust behind the weapon, which discloses its position immediately at night.

These are serious problems. But they can, at least, be reduced by mounting the gun on a vehicle: even the lightest armor will minimize the danger to the crew, and the ability to change positions rapidly will partly alleviate the problem of concealment.

At the same time, vehicle mounting will considerably ease the problem of ammunition handling.

There are thus several good reasons for using all but the lightest models of recoilless guns on self-propelled vehicles. Further, it takes little imagination to see such a vehicle turning rapidly into a tank or, at least, a "tank destroyer." A fast, light vehicle of, say, somewhere between 5 and 15 tons, which would exploit the lightness of the recoilless weapon and at the same time minimize the latter's shortcomings.

Recoilless Gun Tank?

But such a light, recoilless gun armed, armored vehicle has already been advocated from another quarter. It has been proposed on various occasions by U. S., French and Canadian armored force officers as a means of getting round some of the difficulties of size, weight and cost of present day tanks. It has even been suggested as the basic tank of the future, a light and highly mobile tank which would go into action in swift-moving swarms and revive the tempo of ground warfare.

Whether it would prove quite as effective as has been suggested or more so than other types of tanks armed with more conventional high velocity guns must remain a matter of conjecture. But whether it will or not, such a type has undoubted and more immediate possibilities.

In fact, the Germans were already working on such a vehicle when World War II ended. Having considered several types of self-propelled and tank applications they were developing a 150mm recoilless gun version mounted on their light, turretless *Jagdpanzer 38* chassis. Considerable hopes were placed on it as a "tank destroyer," or, more accurately, a vehicle of the light *Panzerjager* class, which was evolved towards the end of the war and which combined the roles of offensive action against hostile armor and direct support of the infantry.

For these roles the characteristics of the recoilless gun were particularly suited: the low velocity, shaped charge projectile provided good anti-tank performance at up to medium ranges and the large caliber assured good high explosive effect. There



U. S. Army

The US 57mm M18, developed to be fired from the Infantryman's shoulder.

should have resulted a highly versatile and successful vehicle but the war ended before the Germans were able to build more than one or two experimental models.

Armament Alternatives

The advantages of any such vehicle are worth considering again.

They are due to the combination of the types of projectiles and the absence of recoil, and hence a light gun which imposes no stresses on the vehicle. But the disadvantages of the recoilless gun are also there: the back blast, and its danger to friendly troops, and the ammunition, as bulky and heavy as that of any heavy, high velocity gun.

Therefore, having accepted a light armored vehicle as the best way of using recoilless guns, or assumed the desirability of a light recoilless gun armed tank, one may well carry the analysis one step farther and enquire whether there is some other way of projecting large caliber, low velocity projectiles from such a vehicle—for is this not the basic problem?

The weight of ammunition could be reduced and back blast eliminated by using a conventional gun. Guns of 105 or even 150mm can be fired from a vehicle of about 10 tons, or even less. But the gun would be considerably heavier and the force of recoil on the vehicle considerable. The projectiles too would have to be much more robust and this would reduce their explosive content and hence effectiveness.

A way round some of the difficulties of the conventional gun, yet without incurring the disadvantages of the recoilless gun, was discovered by German engineers towards the end of World War II. So far the new type of gun has been referred to as a "high and low pressure gun," but it could equally well, and much more briefly, be called a "throttled gun."

Throttled Gun

Very briefly, the main feature of this gun is that the front of the cartridge case is closed by a nozzle plate (in practice a plate with plain holes), and by a suitable choice of areas the pressure on the base of the projectile can be kept lower than in the chamber—hence the "high and low pressure" designation.

This drop in pressure across the nozzle plate means that the peak pressure in the bore and on the projectile is lower and hence a less robust construction can be used and more explosive can be carried in the projectile. It also means that recoil stresses are less violent. For firing low velocity projectiles it can be made a good deal lighter and more efficient than a conventional gun.

Because recoil stresses are not eliminated a throttled gun cannot, of course, be as light as a recoilless gun. But it can still be made sufficiently light to be able to compete directly with recoilless guns in several roles. In fact, the two models which the Germans built and which they were about to introduce into service when the war ended—the 8cm PAW 600 and the 10.5cm PAW 1000—were to serve the same tactical purpose as recoilless guns.

In armored vehicles, in particular, some recoil load can be accepted without any difficulty. The recoil forces of the throttled gun would not, therefore, be a drawback. On the other hand, the saving in ammunition weight and space over those of a recoilless gun would be very considerable and the back blast entirely eliminated. It would appear, therefore, that the throttled gun is a very serious competitor of the recoilless guns mounted in vehicles, which as already shown, means virtually all recoilless guns except the very light models.

Conclusions

These comments show how far the analysis has moved from the starting point, from the popular concept of the recoilless gun as a portable, all-powerful, infantry weapon, which would spell the doom of the tank. To clarify this reasoning it is worth restating the main points.

The recoilless gun of today is essentially a light, low to medium velocity weapon and as such relies for its armor-piercing performance on the focussed blast energy of the shaped charge projectile. Its light weight makes it particularly valuable to all infantry units, airborne or otherwise, and the lighter models are truly portable. But for effective armor-piercing performance larger caliber and heavier guns are necessary. The result is

that the recoilless gun ceases to be portable.

Whatever its size, it will still be a great deal lighter than a conventional gun but, except for the very light models, the problems of transport and tactical mobility are much the same. It may thus be towed or it may be mounted directly on a vehicle—to get the best results as in the case of the conventional gun. In fact, the case for a self-propelled version is even stronger than with the latter, in view of the disadvantages of back blast and bulky ammunition. The second conclusion would thus seem to point definitely to a self-propelled version.

From a self-propelled recoilless gun there is but a small step to a recoilless gun tank. The latter has been suggested as a way of improving vehicle design through gun characteristics, just as the former is a way of improving gun effectiveness through the characteristics of the automotive vehicle. Whichever the approach the result is much the same—which is hardly surprising since tanks and self-propelled guns are fundamentally the same.

As regards the armament of such a vehicle the recoilless gun would appear to have a most serious competitor in the throttled gun. But whether one type or the other is chosen the final result will essentially be the same: a relatively light, highly mobile and relatively inexpensive armored vehicle.

Most likely it is going to be a general purpose vehicle of the type which would considerably increase the organic fire power of infantry units and provide airborne units with badly needed mobile heavy weapons; which would augment the striking power of armored units by providing them with a light, go-anywhere vehicle; which would, in an amphibious version, provide mobile, readily available fire power for the initial landing forces; or, in a wheeled version perhaps, a versatile vehicle for reconnaissance and armored cavalry units.

It may even be able to accomplish more. But this list of possible roles is a sufficient indication of the potentialities of such a vehicle—and of the fact that recoilless guns, far from making tanks obsolete, should make them even more effective and versatile.



The British version of the American Jeep makes a sharp turn on a hillside.



The new Liaison scout car carries a crew of three, is capable of over 58 MPH.



The Universal carrier, an improved version of World War II Bren gun carrier.

Britain's latest combat and general service vehicles—some just off the secret list—were shown to military experts of the European Defense Community, at a demonstration held at the "proving ground" of the Ministry of Supply's Fighting Vehicles Research Establishment near Chobham, Surrey.

The vehicles put through their paces on hilly country, ranged from motorcycles to a huge 30-ton tractor, towing a 60-ton tank transporter, complete with Centurion tank, some of which were driven round the difficult cross country circuit, negotiating sharp bends and right angle turns at high speeds, and climbing gradients as steep as one in three.

One of the vehicles which stole the limelight was the new six-wheeled armored personnel carrier, known as the "Saracen," which was seen in public for the first time. It is to be issued to motor battalions of British armored divisions. Powered by a Rolls Royce engine, it has a top speed of 45 miles per hour, and weighs ten tons. It can carry a complete section of infantry, and is armored against small arms fire and shell splinters. It mounts a .30 caliber machine gun and a Bren gun. An outstanding feature of the vehicle

is that it can even be driven minus a wheel or two if the front wheels are not hit. The military experts were also highly interested in a new liaison scout car which seats a crew of three and is capable of high speeds over rough country.—British Information Services.



The ten ton Scammell recovery truck, negotiating a one in three gradient.

NEW BRITISH VEHICLES FOR COMBAT AND GENERAL SERVICE

All Photos—British Information Service



This six cylinder scout car was outstanding for its cross-country mobility.

If War should come, we, the people of the United States, with our "Know-how," should not try to meet hordes with equal hordes. We should employ our equipment more skillfully.

CARDED

THE ARMORED CORPS AND ARMORED ARMY

by MAJOR HAROLD H. DYKE, JR.

IF war should break out in Europe, we need not and should not plan to meet hordes with equal hordes. We must be well in advance in the nature of our weapons and the skill with which we use them." Dr. Vannevar Bush made this astute statement in a speech at the Mayo Clinic, Rochester, Minnesota, on the 26th of September, 1952.

The doctrine on the employment of armored divisions, as presently taught in our service schools, is not fulfilling the above requirement for

skillful use of our modern weapons, including helicopters and atomic artillery. The present school doctrine contemplates the organization of army corps, within Field Armies, in which the ratio of armored divisions to infantry divisions is about one to three. Such employment results in the frittering away of armored strength in "penny packets." It fails to make the maximum use of the powerful characteristics of mobility, flexibility, and firepower inherent in armor.

It is true that this type corps organization was used with great success in World War II by such leaders of armor as Generals Patton, Walker, Harmon, Eddy, and Crittenger, but the blunders of Hitler and the exhaustion of the German

armies played a major part in that success. In the War Between the States, horse cavalry was used with great success by the South and later by the North. Infantry, attacking in waves behind an overwhelming artillery barrage, achieved a degree of success during World War I; however, neither the outmoded arm on the one hand nor the outmoded technique on the other could reasonably be expected to produce any decisive result in favor of the user today.

Thinking leaders, both military and civil, see the futility of attempting to defeat Eastern masses with the sort of combat at which the latter are manifestly superior, i.e., "meet hordes with equal hordes." The most skillful use which can be made of our superior equipment is to employ it in

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To employ our Armor in greater mass than ever before, we must reorganize it in greater masses. This entails the formation of Armored Corps and Armored Armies under its own leaders.

highly trained formations possessing maximum mobility, both strategic and tactical, firepower and shock action. Such formations would be used in the early phases of a war in Europe to conduct a vigorous mobile defense on a large scale while the Western Allies gather their strength. Later, on the offensive, these units would perform deep strategic penetrations into the enemy's rear and against his centers of control and supply.

Armor is the obvious arm around which to build these formations. Armor alone has the requisite characteristics of mobility, firepower, and shock action. Armor, supported by tactical air and atomic artillery, supplied by helicopter, and with airborne forces under its command, would be the ideal combination in the performance of the missions outlined above.

Armor must be employed in greater mass than the United States Army has ever attempted before. In order to obtain mass, it must be organized into larger formations than ever before, and under its own leaders. The smallest fighting unit into which it should be organized is the corps; the corps could further be confined into armored armies in order to perform the strategic penetrations once the West has gone over to the offensive.

This does not preclude the use of the tank units of the infantry divisions, corps tank and armored cavalry units, and the few armored divisions necessary to add power to the infantry corps. Armor must continue to give its support to infantry along with the artillery and air, but the armored concept must be completely divorced from the Type Corps. The Armored Corps and Armored Army are things apart and must be considered in addition to the present Type Corps and Type Field Army. Only the armored corps and armored army can give the commander the sort of formations he

will need to organize the highly trained, highly mobile forces which alone are capable of inflicting defeat on the masses of the East.

Organization

The unit upon which the organization of the armored corps would be based is, of course, the Armored Division. The armored division contains all the essential elements for the successful performance of the armor mission; however, in order for it to exploit to the fullest its powerful potential for offensive combat, its present organization requires some modifications. As it is presently organized the armored division contains too many non-essential, non-fighting elements which reduce its mobility by making it roadbound and so increase its vulnerability to air and ground attack. In addition, the majority of the vehicles in the division do not possess the cross-country ability of the tanks. This requires that the division base its movements not upon its most mobile vehicle but upon vehicles with less maneuvering ability. In order to overcome these handicaps several changes in the division's organization must be accomplished.

All the elements of the division which are not absolutely necessary to carry out the fighting mission should be eliminated. Bath and laundry units, band, replacement company, The Adjutant General, The Judge Advocate General, the Public Information officer, the Special Services officer, and others that make up the division rear should be organized and trained to operate in the Army area, completely cut off from the division for long periods of time. They should join the division only when it is in a rest area, when it is in reserve for an appreciable time, or at any other time when their presence will not detract from the division's mobility or increase its vulnerability.

An even more effective solution would be to furnish such units from an Army pool whenever the division CG felt the need for them. Such things as a Special Service Office and a PIO have no place in a fighting division's T/O & E and should be done away with.

A further increase must be made in the division's mobility by making every item of transport, both combat and administrative, capable of complete cross-country mobility under all conditions. During the rainy season in Russia, the Germans found that while their tanks were able to move, albeit with difficulty, the wheeled transport in the supporting and supply elements was completely immobilized. This fact alone is convincing proof of the need for all transport to be as mobile as the tanks. This may require that all vehicles be tracked; if this is the case, all vehicles, with the possible exception of the $\frac{1}{4}$ ton truck, should be equipped with tracks and with power plants that will enable them to keep up with the tanks under all conditions of terrain and weather. It may be that industry is developing or will develop a series of wheeled vehicles that will have the same cross-country characteristics as tanks and armored infantry carriers. Regardless of whether or not the vehicles are tracked or wheeled, the criterion by which they must be judged is their ability to keep up with the tanks and carriers during movement off the roads. The mobility of the division must be based on the capabilities of the fighting vehicles.

The incorporation of the above changes into the organization of our present armored division will render the division more capable of performing its important role in the armored corps. The same principles of organization should be adhered to when the armored corps is formed.

This does not preclude use of tanks in support of the Infantry Division but it does divorce the Armored Corps concept from the Type Corps concept, to obtain the required Armor Mass.

All headquarters and units which do not contribute to the accomplishment of the fighting mission should be left out of the corps troop list. All transport must be capable of moving with the fighting units cross-country; here again the answer may be to put everything on tracks. The armored cars should be organized so as to be able to operate deep within the enemy rear without fear for its own flanks or rear. The armored corps should consist of armored divisions, the necessary minimum of logistical and supporting units, and one or more armored cavalry regiments to provide flank and rear security and protection of the corps trains. Everything should be done to free the corps commander from the drag of large unwieldy trains and from the crippling necessity for regulating his advance by that of the slow infantry army. Aerial resupply, both by conventional aircraft and helicopters, should be utilized whenever possible. Organization should be based on the requirement for taking the maximum advantage of the flexibility and mobility of armor troops and the flexibility of the minds of the armor commanders.

Employment of the Armored Corps and Armored Army

As mentioned earlier in this article, the armored corps is ideally suited, by reason of its mobility, flexibility, great firepower, and shock characteristics, to play the leading role in a mobile defensive situation and in an offensive situation utilizing the strategy of the indirect approach. During the initial phase of any future war, the Western Allies will be forced on the defensive while they mobilize and prepare to strike back at the enemy. During this defensive period it would be the height of folly to attempt to form a continuous defensive line along a natural obstacle such as

the Rhine River. Such a cordon defense would suffer the same fate as the Austrian cordon in Italy during Napoleon's first campaign in that country. Disaster would result not only because of the weakness inherent in this type of defense but also because there probably would not be enough divisions available for the job.

A mobile defense based upon the armored corps should be adopted. Available infantry divisions should be organized into a series of "hedgehogs" along the obstacle to be defended. The "hedgehogs" need not be mutually supporting but must be strong enough in weapons and supplies to withstand the heaviest attack for several days. Behind this gigantic outpost line the maximum number of armored corps should be held in reserve. As the enemy attack in any army area threatening a penetration of the line of "hedgehogs" or the destruction of one of them, the armored corps should be launched in a powerful counter-attack, limited in objective but designed to cut off and destroy the threat. Because of its maneuverability, flexibility and lack of dependence on the existing road net, the armored corps could move quickly to counter a threat in any part of the army area, destroy the enemy, and return to its reserve position in minimum time and with little confusion.

When the Allies move over to the offensive, the strategy of attack must not be based on a continuous pressure exerted against the enemy all along the front, driving him back on his prepared positions and on his reserves, as was the SHAEF strategy in Europe in the last war. Rather the strategy of the indirect approach, as advocated by B. H. Liddell Hart, utilizing deep penetrations into the enemy rear to seize his centers of control and supply should be employed. In this situation the armored corps organized into an armored army would come

into its own. Able to maneuver cross-country, able to drive ahead without fear for its flanks or rear, resupplied by air when necessary, the armored army could drive deep into the enemy's rear seizing his nerve centers and paralyzing his operations. Such strategy was advocated by Guderian and other German armor leaders in the early stages of the German campaign in Russia. The effectiveness of the armored army in such operation could be increased a hundred-fold by placing under its control one or more airborne divisions. In this way the indirect approach would be accomplished from two directions, the airborne troops dropping from the sky on a critical center, well in the enemy's rear, while the armored army, slashing through a gap made by atomic artillery, moved swiftly on the ground for a link-up. Armor and airborne would form an unbeatable combination.

Summary

Victory for the Western Allies, in the event of another major war, lies in using the most modern weapons in the hands of highly trained, highly mobile troops employing maximum firepower and flexibility against a larger and inherently slower enemy. Armor, with its characteristics of mobility, flexibility, firepower and shock action, is the logical arm for the task. Organized into armored corps and armies to obtain the necessary armor mass, it can perform the initial defensive task by conducting a vigorous mobile defense, and, when the offensive stage is reached, it can encompass the final defeat of the enemy by a deep stab into his vitals. The armored corps and the armored army can be and should be relied upon to fulfill the requirement, as stated by Dr. Bush, for skillful use of the modern weapons which science will give it.

BACKGROUND

for deliberate planning



by LIEUTENANT COLONEL GEORGE B. PICKETT, JR.

ARMOR thrives on "Deliberate Planning" and "Violent Execution." But deliberate planning requires adequate and timely information on which to base the plans. Throughout all of our training in Armor, we have been taught certain factors affecting tank employment, such as terrain, weather conditions, obstacles, soil trafficability, and enemy antitank means. These are planning factors at all levels and in varying degrees from the Tank Commander to the Field Army Commander. However, the methods of obtaining the information and using it will vary with the size of the unit. Normally, we can consider these factors under the general heading of tank terrain and trafficability studies for the larger units. The information can best be used in the "deliberate planning" phase by the use of a tank terrain and trafficability map.

Information Sources

Sources of obtaining terrain and trafficability information include personal reconnaissance, patrols, engineer road reports, reconnaissance units, reconnaissance by light aircraft, aerial

photographs, civilian line crossers, interrogation of PW's, artillery surveys, and various combinations of all these.

Tank Terrain and Trafficability Situation Map

As this information is received from the various sources, it must be collated and recorded in a place and manner to make up-to-date information readily available to the planners. A tank terrain and trafficability situation map affords the best means. This map is best maintained by the armor officer in Corps or Army headquarters and by the G(S)2 in divisions, regiments, combat commands, and battalions. It should be maintained as current as the situation permits. All changes in trafficability resulting from fluctuating weather conditions (rain, snow, freezes, thaws, etc.) must be recorded on the map as soon as received. A map clerk can maintain the map similarly to G2 or G3 situation maps. All information is then funneled through this one clerk who posts the information, source, date, time and other information of importance as quickly as it is received.

Information to be Recorded

Information that should be recorded on the map falls into two categories: Terrain and trafficability conditions that affect tank maneuver,

and detailed information of a "spot" nature.

The information, as recorded here, is based upon Korean experiences and does not necessarily apply worldwide.

In the first category we find conditions that affect tank cross-country maneuver and that determine the maximum size of the tank unit that can be deployed in any particular terrain compartment. Cross-country maneuver is affected by natural and artificial obstacles, soil conditions, weather conditions, and the width of the valley or the width of the area between obstacles. In Korea it is normally the valley widths that primarily restrict the size of the tank units that can be deployed; whereas, in other geographical areas it could be the widths between marshes or whatever the main obstructions indigenous to that area happen to be. However, the problem of determining and designating the maximum size unit that can be deployed exists. The map and any reproductions or overlays made from it must include in the legend the formula that was used as the basis for computation. The formula used in Korea by IX Corps was based on the principle that the maximum tank platoon deployment is the line formation with certain specific intervals between tanks. Therefore, any valley capacity in terms of numbers of tanks was determined by dividing the usa-

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ble space (valley width) in yards, minus unusable spaces in yards, by that specific distance. However, since tanks are not employed in numbers but as units, the number of tanks was divided by five to obtain the number of platoons that could be maneuvered in this area; the number of platoons was divided by three to obtain the number of companies that could be employed, and the number of companies was divided by three to determine the number of battalions that could be employed. Using this formula to determine space requirements for the American type armored division, we can consider that space for two battalions would be the minimum space in which a combat command could be deployed, even though it would even then be considerably restricted in its maneuver.

Technique of Keeping the Map

The trafficability and deployment information must be plotted on the map so that it can be utilized at a glance. This can be done by the use of color tinting with separate colors to represent different maneuver space capacities. For example, blue can be used to tint all terrain compartments in which entire tank battalions can maneuver; green can be used to indicate an area in which one or two tank companies can be deployed; brown can be used to indicate areas where one or two platoons may be deployed; and red can be used to indicate areas impassable for tanks, such as swamps, marshes, cliffs, sand traps, as well as enemy antitank obstacles and mine fields. When operating in mountainous areas, where the bulk of the terrain will be so mountainous that tanks cannot be employed, the legend can indicate that any unshaded area is impassable due to mountainous conditions. This applies particularly in Korea in order to avoid having red almost completely predominate on the map. It is poor psychology to let the "impassable" color predominate.

The next category of information to be plotted on the map is "spot" reports that indicate such information as road widths, bridge capacities, bypasses, fording sites, good direct firing positions, routes of approach, enemy mine fields, antitank ditches, possible tank bivouac areas, assembly areas and attack positions. Also, spe-

cial temporary conditions, such as detours, flash floods, temporary bogs, quicksand, and impassable mountain passes due to ice or snow conditions should be indicated. In short, all information that is of planning value both at the Corps and Army level and at the fighting level should be plotted.

Reproduction and Dissemination

In order to be of value, this information must be available to planners at the higher headquarters as well as the operational tank units. Although much of the information is valuable only to the tankers in their immediate front, any tank operation, regardless of its scale, in areas where tank employment is restricted, has to be carefully planned. Plans for overcoming natural and artificial obstacles in the path of a tank attack must be made and obstacles eliminated in rear of our defensive lines to facilitate tank counterattacks. Korean experience indicates that due to the psychology of the average soldier and officer in desiring to have the maximum amount of information about his enemy, any information disseminated through G2 channels receives greater distribution, discussion and individual attention than if distributed through a separate channel. For that reason, trafficability information will get to more of the potential users if issued as an annex to G2 Periodic Intelligence Reports (PIR) and as an inclosure to the G2 estimate in operational plans and orders than by other means. The information is best disseminated in the form of over-tinted maps with the spot information overprinted in black. If the information is issued as a compilation of reports, located by grid coordinates, requiring it to be replotted before it can be used, the operating personnel (battalion and company officers) will not use it to the desired extent. The map, when it is reproduced, can be photographed down by the Engineer topographical unit from 1:50,000 scale situation map into a smaller, more usable map, provided the scale is also photographed down with the map. The Representative Fraction of the resulting map is relatively unimportant, since the 1,000-meter grid system and the photographed-down graphical scales will enable accurate distance determination. Also, the smaller the map, the easier it is to handle in a

tank turret or ¼-ton truck. Likewise the smaller size facilitates distribution.

Marginal Information on Reproductions

The legend shows the marginal data that should be included in addition to the graphical scale on each reproduced terrain and trafficability map. Although certain colors are indicated in the figure, any color scheme that is explained in the legend can be used provided it is sufficiently specific to be understood easily.

Korean Experience

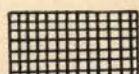
Korean experience indicates that, particularly in areas of restricted tank employment, terrain and trafficability studies are invaluable for operational planning. Although many examples are available to illustrate this point, there are two which illustrate most planning factors.

On 26 April 1951, the Chinese Communist Forces broke through the IX Corps front northwest of Chuncheon. Previous terrain and trafficability studies had shown the valley system northeast and northwest of Kapyong to be capable of supporting two complete tank companies. G2 reports, prior to 26 April, indicated a possible enemy offensive down the Kapyong axis. Consequently, the Corps Reserve, 27th British Commonwealth Brigade, had been moved to Kapyong on 24 April to back up that sector of the line. Company A, 72d Tank Battalion, was sent to Kapyong to join this unit, closing on 25 April. Officers from this company and the IX Corps Armored Section made a "verification" reconnaissance of the terrain while the company was en route to Kapyong. Possible routes of counterattack, objectives, assembly areas, and attack positions were reconnoitered. As a result of this prior reconnaissance and planning, the tank company, although operating against great odds, materially assisted the 27th Brigade in holding Kapyong. The 27th Brigade and Co A, 72d Tank Battalion, withdrew only on IX Corps' order after units on their flank had been penetrated, making their position untenable. Both the tank unit and the 27th Brigade received Distinguished Unit Citations for this action. The Brigade Commander later asked that this company remain permanently as his "brigade tank unit."

LEGEND



—Areas where from two tank companies to an entire battalion can maneuver cross country except in rainy season.



—Areas where from two tank platoons to one tank company can maneuver cross country except in rainy season.



—Areas where tank employment is limited to single platoons cross country.



—Marshland & Tank Traps.

Unshaded—Areas generally impassable for cross country tank movement.



—Main axes of tank employment.

TRAFFICABILITY CLASSIFICATION FORMULA

$$\text{Tank Capacity (in numbers)} = \frac{\text{Valley width — Unusable space (in yards)}}{(\text{Specific distance between 2 tanks in line of yards})}$$

$$\frac{\text{Tank Capacity (in numbers)}}{5} = \text{Capacity in Platoons}$$

$$\frac{\text{Capacity in Platoons}}{3} = \text{Capacity in Companies}$$

Units report changes in trafficability (due to rain, etc.) to Hq _____
(Attn: Armored Officer) whenever observed.

In addition to courage and good leadership, prior information of the battle area was instrumental in this success.

In planning for a tank raid in September 1951 south of Kumsong, arrangements were made to alternate the use of M4 and M46 tanks, based on width of mountain passes. The depth of the attack and the continuation of the attack was planned by using M4A3E8 tanks to crack through enemy front lines initially, having engineers widen the passes and sending the M46's through behind the M4A3E8's into the valleys in order to concentrate all available tank power on the final objectives.

Summary

It cannot be overemphasized that mere road and trail information is not sufficient for satisfactory planning. The actual cross-country maneuver capacity of each area must be determined prior to making operational plans. Also, terrain and trafficability studies cannot degenerate into mere map studies, but must reflect accurate and up-to-date terrain conditions. In addition, engineer studies of areas of operation that have been made years previously from topographical maps must be carefully re-evaluated, since they are generally accurate only as to whether there are mountains or val-

leys in an area. However, they do provide an excellent guide for planning the study by indicating the areas that might be trafficable and enabling the responsible individuals to plan their reconnaissance to obtain the necessary data. Whenever line crossers, PW's, and patrols are used as a source of the information, it must be verified. The armor officer must ascertain that these individuals are sufficiently well acquainted with tanks before the information can be used. In this respect, the credibility of the source has to be evaluated almost the same as a G2 evaluates sources of enemy information.

The Top Command in the Far East

Since this spread was last published in the March-April, 1952 issue of ARMOR, many changes have taken place, and further changes will undoubtedly occur, even as this is written. The one of prime importance and most dramatic, of course, was the cessation of hostilities; that is, the end of the shooting war. We, likewise, see an entirely new array of faces. It is a fact that not one key commander who appeared here on this page last year is currently in that critical area. Once again, as stated in the July-August, 1953 issue of ARMOR, this is a tribute to the wealth of top command personnel available to the United States armed forces. In addition to the Army personnel depicted hereon, ARMOR recognizes and pays tribute to the contributions made by its sister services in arms; however, space does not permit the mentioning of all those who were so deserving. Yes, the shooting stage has stopped, but we must not forget the vital importance of the area that so recently has required dearly of our blood and treasure.—THE EDITOR.

U.S. Army Photos

FAR EAST AND EIGHTH ARMY COMMANDERS



Gen. Mark W. Clark
Commander in Chief, Far East



Gen. Maxwell D. Taylor
Commanding General, Eighth Army

THE CORPS COMMANDERS



Lt. Gen. Bruce C. Clarke
Commanding General, I Corps



Maj. Gen. Thomas Hickey
Commanding General, IX Corps



Lt. Gen. Reuben E. Jenkins
Commanding General, X Corps



Maj. Gen. Samuel T. Williams
Commanding General, XVI Corps

THE DIVISION COMMANDERS



Maj. Gen. Armistead Mead
CG, 1st Cavalry Division



Maj. Gen. Randolph Pate
CG, 1st Marine Division



Maj. Gen. William L. Barriger
CG, 2d Infantry Division



Maj. Gen. Eugene W. Ridings
CG, 3d Infantry Division



Maj. Gen. Arthur G. Trudeau
CG, 7th Infantry Division



Maj. Gen. Charles L. Dasher, Jr.
CG, 24th Infantry Division



Maj. Gen. Halley C. Maddox
CG, 25th Infantry Division



Maj. Gen. Ridgely Gaither
CG, 40th Infantry Division



Maj. Gen. Philip D. Ginder
CG, 45th Infantry Division

The Revolution: American Military Policy Emerges from the Crucible of War*

by C. J. BERNARDO, Ph.D. and EUGENE H. BACON, Ph.D.

England the Underdog

CONTRARY to the popular belief that the American colonists engaged in an almost hopeless task when they decided to settle the issue in a clash of arms with the might of Great Britain, there were many factors which actually placed the British in the role of the underdog. Without listing these in any category of importance, the following sequence of events will suffice to bear this statement out.

The exchange of fire on Lexington Green was less a spontaneous reaction of a patriotic people against British tyranny than the result of a well-directed and carefully calculated movement to achieve complete independence by force of arms; albeit many Americans cherished the hope as late as July 3, 1776, of a reconciliation with the mother country.

By 1763, the thirteen colonies had learned to subvert their local prejudices in favor of a common bond of union, welded by a community of purpose and aims, when pressed by the dangers of a common foe. They had fought shoulder to shoulder in all the colonial wars since 1689, and three quarters of a century had bred within them a mutual understanding of each other; a spirit of unity which was alien to the ways of Europe.¹

During this period, largely because of their isolated position from European turmoil and intrigue, they had come to enjoy a larger and ever-increasing measure of political liberty by initiating laws while limiting the power of the royal governors, by control of provincial finance, and by appointing administrative officers despite the contention that this appointive power resided in the governors alone.

These extra-legal privileges went unchallenged while England contended with Louis XIV for control of the continent; and after the Peace of Utrecht, in 1715, this "salutary neglect" was permitted to go unchecked by England's ministers who had grown to view with a measure of suspicion any scheme for taxing the colonies. Nor were they checked in 1756, when England made a determined effort to displace the French in North America. To attempt it at this time would have been folly since full support of the American colonists was not only desirable, but indispensable to British victory.

Keenly aware of the fortuitous implications of these contingencies, the colonial assemblies lost little of their initiative for prying further concessions from Parliament. Throughout the course of the French and Indian

War, they displayed a greater eagerness to curtail British authority than to come to grips with the French and their Indian allies, with the result that they strengthened their claim to exclusive control of the purse strings. When they granted money, they prescribed the purposes for which it was to be spent; and often interfered in the command of military forces and removed officers considered incompetent.²

In taking advantage of the critical position of England hard-pressed by war in Europe, America, and India, the provincial assemblies dispossessed the Crown of its powers. All were unanimous in giving only the barest assistance for the war effort; and even the most loyal of the colonies refused to subordinate their own interests to those of the King. Compared with this unity of objectives, the thirteen colonies displayed a provincial isolation which defeated the plan of Parliament, accepted by Benjamin Franklin³ to join the colonies in a military union in 1754. Unmindful even of the repeated threats of coercion from Parliament, the assemblies remained firm in their resolves to refrain from such a union.

After four troublesome years of experimentation with this method of financing the war, William Pitt saw

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the wisdom of bringing to an end his Government's determination to persuade the legislatures to shoulder their share of the expenses of the struggle. Instead, the colonies were promised reimbursement for their expenditures, and with no restraints and few strings, they threw economy to the winds in equipping and supplying troops. The humiliation of stooping to her colonies was a high price to pay for aid; but added to this, Great Britain was saddled with a tremendous public debt brought about by the most expensive war Englishmen had ever waged. In contrast, the colonies emerged with a comparatively low debt, and greatly enhanced prestige in local self-government. These were no small considerations in the determination of George III to tax his subjects to help defray the crushing debt.

England's experiences in the Seven Years' War clearly indicated the need for a change in colonial policy. The stubborn refusal of the colonies to work together for the benefit of the mother country might prove fatal in another conflict. From the purely selfish viewpoint of protecting the Empire, the King's ministers could no longer disregard the need for a revitalization of the ties that bound the colonies. Few could deny the wisdom of this decision, but fewer still were willing to accept the British formula for bringing about a more perfect union. Having partaken of the fruits of unlimited self-government for almost a century, Americans were prone to guard jealously against any encroachment upon their political and economic independence by means of taxation.

Disregarding the serious consequences that were sure to follow in the train of economic coercion, Parliament undertook to set in motion the series of incidents that would lead to open revolt. It should have been evident to the King's advisers and to George himself, that what England had been unable to bring about in 1756, she could no longer accomplish after the threat of French aggressiveness in America had been eliminated in 1763. While the danger from that quarter remained, Americans were forced to seek the protection of the British Army and Navy. But now this was past, and with it had slipped any hope the

British may have entertained for knitting the colonies into a solid union. Unfortunately for the Crown, British statesmanship at that time failed to display the talents of future generations of its leaders on the stage of power politics. The American Revolution was kindled by the fateful decision of Parliament to enforce the financial prerogatives of the Crown.

American objection to taxation was aired primarily because of a universal feeling that it was a scheme to enhance the economic well-being of British merchants at their expense, and secondly because the money thus collected would be used to maintain and subsidize large English armies in North America. Each succeeding revenue law, beginning with the Sugar Act of 1764, was met with increased opposition until the flood gates of public indignation were finally thrown open by the Boston Tea Party. This outbreak was precipitated by the notorious Townshend duties of 1767,⁴ and paved the way for the Intolerable Acts of 1774,⁵ which drew the curtain on the first phase of the bloody melodrama that was destined to last eight years.

Below the surface of this controversy, Americans began to lay the groundwork for a unified effort to dispute the authority of Parliament to tax them without their permission. By 1768, a nonimportation agreement was consummated among the New England colonies, New York, and Pennsylvania; and one year later, their southern neighbors joined the concert. Americans clothed in homespun began to give evidence of a national consciousness.

The uncompromising temper of the patriots in opposition to the Parliamentary policy, coupled with British inability to restrain them, assured the final break. The difficulties encountered by Parliament in formulating and executing American policies were vastly increased by the problems created by time and space, a factor which led Edmund Burke to remark: "Americans were finding that they had a great resource in the incapacity of the mother country."⁶ Well aware of their own strength and the utter helplessness of the Crown to execute the laws, Americans could hardly be restrained even by their own local governments. It

was only a matter of time until the attempt on the part of Britain to impress her will was bound to be challenged by a show of force.

In 1773, when the British established a Court of Inquiry in Rhode Island to investigate the destruction of the *Gaspee*,⁷ the Virginia House of Burgesses sounded the tocsin of rebellion by proposing that committees of correspondence be appointed by all assemblies in America to resist all forms of oppression. In Boston, Samuel Adams met the crisis by organizing a similar committee designed to cover New England with a network of resistance groups, and the middle colonies quickly fell into the pattern of united opposition. (What they had failed to bring about in 1756 the British finally achieved by neglecting to understand the American psychology.) With the destruction of the tea in Boston, the intricate and cumbersome wheels of this machinery were set into high gear, and the British attempt to bring the culprits to justice merely accelerated the effectiveness of these committees.

The closing of the Port of Boston, June 1, 1774, was actually an experiment to determine how far the other colonies would go in giving succor to a sister colony. The Government of George III had not long to wait for the answer. In this emergency, the colonists rallied to the aid of the beleaguered city. Plans were quickly evolved, in an effort to unite the colonies for a common defense, to call a Continental Congress; and while the question of ultimate control over this body remained dubious at the outset,⁸ the British were to furnish the solution by the passage of the Coercive Acts during the summer of 1774. The arbitrariness of these laws was sufficient ointment to salve all the petty jealousies existing among the different patriotic elements.

The immediate effect of these Acts was to produce an outburst in Massachusetts which swept all authority before it, and the Boston Committee's call to arms quickly aroused the country against British tyranny. At the same time, patriot leaders utilized this evidence of oppression with great effect by interpreting the Quebec Act as a challenge to religious liberties in America. The blaze spread in all parts at once, observed General

Thomas Gage, "and the mother country began to appear in American eyes as a foreign despotic and Papist power."⁹

As a counter-measure the local Committees of Correspondence issued the call for a Continental Congress to represent the interests of the thirteen colonies.¹⁰ The most important task assigned to this body was the creation of an "Association" to supervise the boycott of English goods and to direct the public support for united opposition. In Boston, General Gage sat upon a powder keg, unmindful of the revolution that had been wrought by the decision of the Continental Congress. Hemmed in on all sides save the sea, Gage could do little except remain in winter quarters at Boston to await further orders, reinforcements, and the Spring season.

What the British commander had overlooked, however, was the tremendous resources in man power that America could count upon; and he, as well as his superiors in London, neglected to attach much significance to Baron DeKalb's report on the militia of the colonies. According to this estimate, the number was conservatively placed at 200,000 men,¹¹ and while largely untrained in the art of modern warfare, they did possess a working knowledge of small arms. These men, mostly old soldiers, were known, listed, and assigned to units; and the machinery existed, frequently tested, for calling them out.¹² While their training was defective from the viewpoint of existing practice, tactical measures against surprise attack and forest warfare had been perfected to a science since the days of John Smith and Miles Standish.

Moreover, although Americans themselves were generally willing to admit their militia organizations could not compare with those of their British cousins, Englishmen were prone to exaggerate the proportionate difference. Furthermore, it was generally felt in England that American militiamen were no match for British regulars. Few could dispute this fact. But what about the leadership which is a necessary element in any army? Little regard, it seems, was in evidence for American generalship which had demonstrated itself during the late war with France. Twelve general officers of the Revolu-

tionary War had seen service in the French and Indian War, and several others had already been tested as Indian fighters.¹³ In addition to all this, individual Americans had proved their mettle under such leadership on more than one occasion. These resources were not easily to be discounted even by proud Britons. And if they were, a healthy respect was soon to be acquired for the pastoral riflemen on Bunker Hill.

Nor could the lack of powder magazines and arsenals be charged as a disadvantage for the patriot cause. Inferiority in artillery weapons was nullified to a large degree by the seizure of many cannon from the weakly garrisoned coast forts, and by the bold exploits of American privateers. Small arms and powder, metals and saltpeter were plentiful; and the numerous navigable rivers and rich agricultural land provided a reservoir of abundance that could permit the assembling and subsisting of large bodies of troops. Compared with these, British troops were few and widely scattered on the eve of the war; and while England could check Americans with a naval superiority, she could be checkmated by the tremendous facilities in the hands of the patriots for building and manning ships.¹⁴ If all this were not enough to impress the British with the futility of attempting armed coercion, every problem of logistics, recruiting, and even of strategy that plagued the American Commander-in-chief had to be multiplied (in the British column) by the distance separating the two continents. Britons proved to be poor students of simple arithmetic.

The British Are Coming

The decision of Thomas Gage, the British General, in Boston, to capture the military stores at Concord gave rise to a spontaneous call to arms implemented by dispatch riders throughout New England and to New York spreading the news of the coming of the British. The men who drew up on Lexington Green on April 19, 1775 in answer to this summons were farmers who knew little of military discipline, but they did know how to make the most of the terrain upon which they chose to fight, and when the bloodshed had ended, they had proved their point

with callous effectiveness. There was little left for the small British force but to withdraw to Boston for a much needed "breather."

When news of this engagement reached the southern colonies and the western frontier settlements, the cause of America suddenly crystallized into a national crusade. All were now unanimous (the Tories excepted) in the opinion that British tyranny in any form could no longer be tolerated this side of the Atlantic; and although the men beyond the Hudson River felt little compunction for sending their militia immediately to the aid of Boston, there was no dearth of spirit. Arms were quickly collected, outgoing ships were seized, and men organized for the fight.

The swiftness in which an army was gathered around the Bay city was due chiefly to the efforts of Massachusetts. Some weeks before Lexington, her leaders had taken steps to invite the neighboring New England colonies to join in a proposed Army of Observation; and when Gage struck, chosen delegates were already out on their missions. As early as December, 1774, Rhode Island, acting in accord with the Massachusetts proposal, had made preparations to reorganize her small militia force by amending the old laws to distribute public arms and cannon (seized from Fort George at Newport), and for the dispatch of her militia to the aid of any of the sister colonies. Later in the same month, New Hampshire also seized her share of guns and cannon from Fort William and Mary at Portsmouth, and made preparations to qualify her militia for any ordeal. In Connecticut, the militia was both well-equipped and well-trained and stood ready to march to the defense of the Bay State.¹⁵

Recognizing the necessity for efficient organization and coordination, Massachusetts assumed responsibility for the forces gathering around Boston and selected the general officers to command.¹⁶ On April 23, the provincial legislature proposed the raising of an army of 30,000 men to be principally drawn from these forces. Of this total, they assigned themselves a quota of 13,600, the rest to be recruited from the other colonies.¹⁷ To encourage recruiting, the Massachusetts Committee of Safety offered

the commission of Captain to any man who could bring 56 men into camp, and higher grades in similar proportions. While this new Army was slowly being recruited to serve for eight months, the men who had held the lines since April 19, and who refused to enlist, began to make their way back home. In this manner the minutemen, who had been part of the militia system for over a hundred years, faded out of the picture, giving place to the militia and the continental army.¹⁸

By the middle of May, the hoped-for enthusiastic enlistment of thousands of men failed to materialize, and the Massachusetts Provincial Assembly began to grow apprehensive in the face of the tremendous responsibility they had so suddenly inherited. The appeal to a stronger power to carry forward the burdens of organizing and supporting this army could no longer be postponed by the Bay State leaders. Traditionally fearful that a powerful military might overshadow the civil authority, reluctant to bear the cause of America alone, and finally admitting the need for a more energetic conduct of military affairs, the Massachusetts Congress, on May 16, appealed to the Second Continental Congress, assembled in Philadelphia since the 10th.

This appeal was prompted more by the fear that Massachusetts could exert little control over a force recruited from other colonies than by a desire to surrender authority to some national body empowered to do the will of thirteen united colonies. In this narrow outlook, the Bay Colony willingly accepted what was considered a lesser evil rather than gamble on the eventuality of a military force which owed obedience to no other authority than the individual colony each component represented. Haunted by this petty provincialism, they appealed to the Continental Congress for advice; and, since this army was for the general defense of all the colonies, "we suggest your taking the regulation and general direction of it. . . ."¹⁹

Three days later, May 19, the Congress assumed full responsibility and General Artemas Ward was commissioned to command under this new jurisdiction. On the same day, the commissioning of entire regiments was undertaken,²⁰ but because re-

cruiting was slow they were under strength, and the 30,000 man army remained merely a future quantity. Meanwhile, most of the men in the field were wending their way home. Since the British were not fighting there was no immediate danger, hence no need for them to longer absent themselves from the hearthstone. Furthermore, the fields were in need of attention.

This condition gave rise to many apprehensions on the part of the leaders who were not slow to realize that, despite an apparent victory over the British, they had no army. Around Boston swarmed an unorganized and undisciplined force, its regiments incomplete and companies varying in size; but here, they were sure, was the core of a real force. The weeding out process was deliberate and painful. The militia had to be sent back home to be called out again and again as the need arose; and the minutemen as a body disappeared principally because they had no legal standing.²¹ Those who remained did so on a voluntary basis, it being difficult to enlist men who already were registered as militiamen in the various colonies without incurring the displeasure of those colonies. These legal obstacles in the path of enlisting an army from the militia together with all the problems of recruiting and supplies were inherited by George Washington when he arrived on the scene on July 2. But in addition to this he assumed the command of a body of troops that had shattered the legend of the invincibility of British regulars.

Washington Assumes Command and Displays the Wisdom of a Genius

Among the first acts to engage the attention of the Second Continental Congress assembled in Philadelphia was the selection of a commander-in-chief for the armies to be integrated with the heterogeneous force collected before the City of Boston. After affirming the right of each colony to self-government, the provisional government was named the United Colonies with leadership vested in a President. As the visible head of government, the Congress began to act with the authority of law enforced by the revolutionary committees of the colonies. On June

15, George Washington was selected as Commander-in-chief of the armies largely because of the impression he had made upon John Adams as a delegate to the first Continental Congress in 1774.²²

That this was a happy choice the episodes of the war bear adequate testimony. That it attests to the wisdom of those who made the selection, the judicious use of the power thrust into his hands to uphold and insure American liberties is sufficient evidence. The supremacy of civil authority is the rich heritage Washington bequeathed his posterity, and future generations of military heroes were to emulate this example with all the wisdom of the patriots who lived and died for freedom. But in spite of these manifestations of sincere devotion to duty, the fiction continued to grow in the minds of most Americans that a strong military organization constituted a danger to liberty, and the only safeguard against such a threat was to render such an entity impotent, even if this meant exposing themselves to the mercy of powerful neighbors.

This fear of the military was sharply emphasized by the British insistence on quartering large bodies of troops in American cities before the outbreak of the war; and, while New England patriots seized upon such a vivid example of tyranny as choice propaganda, the effects upon the public mind lingered on long after the war had ended. Congress, in giving expression to the will of the States, insisted upon civil control of the military at all times. This was made clear on October 14, 1774, when the First Continental Congress announced that standing armies within the colonies "in times of peace without the consent of that colony in which such an army is kept, is against the law."²³ This was reaffirmed in June, 1776, when a Board of War comprising six civilians²⁴ was organized by Congress, and re-emphasized one month later in the Virginia Bill of Rights by the declaration that "standing armies in time of peace should be avoided as dangerous to liberty; and that in all cases the military should be under strict subordination to, and governed by, the civil power."²⁵ These proclamations of civil supremacy were religiously underwritten by the Commander-in-

chief, who made it clear that he would carry out the will of the Congress even if it ran contrary to the dictates of his own reason.

Whatever power the Continental Congress presumed to exercise with reference to military affairs was neutralized by the insistence of the separate states to retain the right to raise a revenue and to levy taxes. In this contingency, resort was had to the emission of bills of credit, the redemption of which was pledged not by the Congress, but by the "United Colonies." Not only was the ensuing military legislation seriously handicapped by these restrictions, but it was made to depend largely upon the combined understanding of a body of citizens who in their individual experience were totally ignorant of military affairs. In this limited capacity the Congress was called upon to direct the war effort, and on June 14, 1775, it authorized a regiment of 10 companies of riflemen to be recruited from Pennsylvania, Virginia, and Maryland for a period of one year. Thus began the system of short enlistments which was to prolong the war, and thus was introduced the Continental Army.²⁶

Two days after this momentous decision, the Battle of Bunker Hill made its imprint indelibly upon the thinking of Americans of that generation and laid the basis for the military philosophy of future generations. This was the proof necessary to convince Americans that standing armies were unnecessary, for here on that June afternoon untrained men engaged British regulars and won a bloody moral victory. Few were willing to heed the warning, however, that the men who fought on Breed's Hill²⁷ could not have proved their valor without the leadership of those officers, standing shoulder to shoulder with them, instructing them, encouraging them, and directing their fire for maximum effectiveness. The redoubts behind which the pastoral militia gained a measure of comfort and safety, were built under the direction of the trained officers; and, while history cannot deny the courage and fortitude of those men, it has failed to ascribe the accomplishments of the day to the ability of the officers who supervised the erection of the defenses on Breed's Hill.

Filled with an overweening con-

fidence in themselves over the outcome of the battle, the patriots gave free rein to their enthusiasm. All sign of discipline soon disappeared while they waited for the British to give battle once more. Added to this was the confusion attending the appearance of increasing numbers of minutemen and militia from the up-country and the seacoast towns of the New England colonies who came under the independent orders of those provincial legislatures.²⁸ When Washington finally arrived on the scene some three weeks later, what his trained eyes saw was not a military encampment, but rather an undisciplined mob respecting no other authority than the officers whom they had elected, and who in turn were restrained in their prerogatives by the electors. In the face of such an unmilitary situation, the Virginia farmer assumed formal command of the Army on the third of July.

On the following day, a general order was issued to the army which at once placed everything upon a new basis and put an end to the divided command that existed in camp:

The Continental Congress having now taken all the Troops of the several Colonies, which have been raised, or which may be hereafter raised for the support and defence of the Liberties of America, into their pay and service, they are now the Troops of the United Provinces of North America; and it is hoped that all Distinctions of Colonies will be laid aside; so that one and the same spirit may animate the whole, and the only Contest be, who shall render, on this great and trying occasion, the most essential service to the Great and common cause in which we are all engaged.²⁹

This meant a complete reorganization of the armed forces in the face of an enemy who might attack at any moment—a dangerous undertaking even under the most favorable circumstances—but here, with little discipline, order, or even government among the troops, it was suicidal. But it had to be done regardless of the hazard.

Washington at once proceeded to organize the Army into three grand divisions with Major General Artemas Ward commanding the right

wing at Roxbury, Major General Charles Lee in command of the left, and Major General Israel Putnam in the center. By this Washington eliminated the separate groupings of men, while the troops of each colony were held together as much as possible. In the matter of commissions for field officers, however, he was allowed little discretion, and as he was unable to reward officers for meritorious conduct, congressional appointees often proved more embarrassing than welcome to him. There was little denying that Congress was going to control this army as much as was possible.

Although Congress recognized the necessity for assuming control, they failed to make the Army a permanent organization. This oversight was the result of a general feeling that the war would not be of long duration, and that a reconciliation with Great Britain could be expected hourly; and by the fear that an army of long-term volunteers might be transformed into a standing army which could destroy its progenitors.³⁰ These reasons were of sufficient moment to limit enlistments to the end of the year.

Such an open display of prejudice against the army was not lost to the sight of Washington, who, hopeful that idealism and patriotism would suffice to induce men to the call of arms, acquiesced in the Congressional policy of short enlistments and opposition to bounties. But, finding himself in the precarious position of seeing his army melt away as the terms of the men expired on December 31, 1775, the Commander-in-chief began to search for means other than patriotism as an inducement to keep the men in the ranks.

However, the soldiers would serve according to the letter of their contract and no more; when their time was up they would go home leaving it up to others to fill their places. This was the system that would prevail at the termination of each enlistment period unless Congress extended the term of service. But Congress was in no position to reckon with reality; their power limited by the will of the States, they could do little more than legislate by resolves which did not carry the authority of law; while the fluctuating character of the American Army became a fixed principle. De-

spite the earnest appeals of Washington urging the men to remain at their posts, each expiration period would witness whole regiments going back home.

With a hostile army just a few miles distant, Washington looked upon the first of these ominous episodes on the last day of the year. If it had not been for the New England militia and the few remnants of the minutemen who hastened in to fill the depleted ranks, he would have been left virtually alone; and his disillusionment was not diminished by the sight of the irregular levies who, for the most part, were unaccustomed to the rigors of camp life in the face of an enemy. This transitional period, from one army to another, gave Washington his most

trying moments, and as each succeeding year came to an end, his apprehensions were compounded over and over again. As one authority describes it: "Nations at war have often changed generals in midstream, but it remained for the Americans to change armies."³¹

Nor did the chagrin of the commanding general end here. There was also the problem of supply which, because of the absence of proper organization, would not only become progressively worse, but often operated to leave whole units without the bare necessities while others were provided with an abundance.³² The limited supply of powder was rendered acute by the lack of proper organization, and at critical moments the army often was forced to with-

hold its fire for fear of running out of ammunition.³³ Coupled with these was the sensitive question of commissions granted by Congress for the new regiments—an issue which never failed to produce a detrimental effect among those men of ability who were passed over. These and many other problems continually plagued Washington, dulled the effectiveness of the Army, and dictated the policy to be followed in the prosecution of the war. In this predicament, there was little advantage in preparing plans, the execution of which would be seriously handicapped by the operation of any number of these deficiencies. Strategy, then, was dependent upon the many vicissitudes which visited Washington from every direction, by land and by sea.³⁴

³¹This feeling of unity reached its high point in 1775. In 1776, when the retributive arm of George III reached out across the Atlantic, each State began to adhere to the age-old dictum of self-preservation, notwithstanding even the Declaration of Independence which at least paid lip-service to the idea of union.

³²John C. Miller, *Origins of the American Revolution*, Boston, Little, Brown & Co., 1943, p. 39. Hereafter cited as Miller, *Origins*.

³³This was the Albany Plan of Union.

³⁴Miller, *Origins*, p. 243ff.

³⁵These were the Quartering Act, the Boston Port Act, the Massachusetts Government Act, the Administration of Justice Act, and the Quebec Act. See Henry S. Commager, *Documents of American History*, New York, F. S. Crofts & Co., 1947, pp. 61-62; 71-76.

³⁶Miller, *Origins*, p. 287.

³⁷*Ibid.*, pp. 325-329.

³⁸Many Americans feared the radical group among them just as much as Parliament's attempt to enforce their authority; and they were reluctant to grant any measure of control over such a Congress to a group that proscribed authority in any form. See *Ibid.*, pp. 368-370.

³⁹Quoted in Miller, *Origins*, p. 376.

⁴⁰The first session of the First Continental Congress got under way on September 5, 1774.

⁴¹Oliver L. Spaulding, *The United States Army in War and Peace*, New York, G. P. Putnam's Sons, 1937, pp. 24-25.

⁴²Spencer Mead, "The First American Soldiers," *Journal of American History*, Vol. I, 1907, pp. 122-123.

⁴³Spaulding, *op. cit.*, p. 25.

⁴⁴*Ibid.*, pp. 24-25.

⁴⁵Allen French, *The First Year of the American Revolution*, Boston, Houghton, Mifflin Co., 1934, pp. 42-45.

⁴⁶These were Artemas Ward, Jediah Preble, Seth Pomeroy, John Thomas, William Heath, and John Whitcomb.

⁴⁷French, *op. cit.*, p. 61.

⁴⁸The minuteman organization was much

like the present regular army in principle. It was looked upon as the first line of defense to hold the lines until the civilian components could be brought into the field. This mission passed on to the regular army with the adoption of the Continental Army on June 14, 1775.

⁴⁹French, *op. cit.*, p. 66.

⁵⁰Field rank was bestowed on the basis of the number of companies a man could recruit. This unique method of recruiting and commissioning officers remained the practice until World War I.

⁵¹On December 14, 1775, Connecticut enacted a law setting aside a fourth part of the militia of that State enlisted for one year on a voluntary basis "to stand in readiness as Minute Men for the Defence of this, and the rest of the United Colonies." See Connecticut, *General Assembly Session Laws, December Session*, December 14, 1775.

⁵²Although there were several generals (Philip Schuyler, Horatio Gates, and Charles Lee) with more experience in the command of large bodies of troops, Washington was selected at the instance of John Adams for the effect this would have upon the South in the war effort. See French, *op. cit.*, p. 284. Cf. Thomas G. Frothingham, *Washington, Commander-in-Chief*, Boston, Houghton Mifflin Co., 1930, *passim*.

⁵³Commager, *op. cit.*, p. 83.

⁵⁴This Board assumed the functions of a War Department and continued in that capacity until a Secretary at War was selected.

⁵⁵Commager, *op. cit.*, p. 104.

⁵⁶This force, together with the 17,000 men blockading Boston, became known as the Continental Army in contrast to the Ministerial Army.

⁵⁷The Battle was really fought on Breed's Hill.

⁵⁸By this time open criticism of Artemas Ward was rife; although Connecticut agreed to place her troops under his command, Rhode Island refused to surrender her authority until George Washington was selected to command. See French, *op. cit.*, p. 86.

⁵⁹John C. Fitzpatrick (ed), *The Writings of George Washington*, Washington, Government Printing Office, 1934, Vol. 3,

p. 309. Hereafter cited as *G.W.W.* On August 11, the Massachusetts Assembly reaffirmed its *Resolve* to place its Army under Continental authority. See Massachusetts, *Records of the Great & General Court or Assembly for the Colony of Massachusetts Bay, July Session, 1775*, August 11, 1775, p. 77. Rhode Island voted in the same manner on June 29, 1775. See Rhode Island, *Journal & Minutes & Proceedings, June Session, 1775*, No. 5.

⁶⁰The question could be debated here. It might well be asked whether the conservative element in the Revolution were not more fearful of the patriots who had demonstrated but little regard for the rights and property of their own numbers during the struggle over taxation since 1763. Was it the fear of the conservatives who lived in constant dread of the explosiveness of the more liberal elements that gave wide currency to the fears of a standing army? John Adams gives some evidence of this feeling in declaring that only "the meanest, idlest, most intemperate and worthless . . . would enlist in the army for the duration of the war. . . ." See John C. Miller, *The Triumph of Freedom*, Boston, Little, Brown & Co., 1948, p. 81. Hereafter cited as Miller, *Triumph*.

⁶¹Miller, *Triumph*, p. 83.

⁶²In his account of the suffering at Valley Forge, Lafayette wrote of the unfortunate soldiers: "they had neither coats, nor hats, nor shirts, nor shoes; their feet and their legs froze . . . and it was often necessary to amputate them." Yet while this was going on, "hogsheads of shoes, stockings and clothing were lying at different places on the roads, and in the woods, perishing for want of teams, or money to pay the teamsters." See William Matthews and Dixon Wecter, *Our Soldiers Speak, 1775-1918*, Boston, Little, Brown & Co., 1943, p. 54.

⁶³For a descriptive analysis of the faulty organization of the services of supply see Miller, *Triumph*, Chapter 8.

⁶⁴For a sweeping review of the complex and interrelated problems handled by Washington as Commander-in-chief, see Douglas S. Freeman, *George Washington*, New York, Charles Scribner's Sons, 1952, Vol. 5, pp. 497-501.

NEWS NOTES

Tank Contract Awards Announced

Secretary of the Army Robert T. Stevens recently announced his decision to award a contract for approximately \$200,000,000 (M) worth of M48 medium gun tanks to the Fisher Body Division of General Motors Corporation.

The General Motors bid on the M48 tanks was approximately 12 percent lower than the quotation by the Chrysler Corporation for production of the armored vehicles.

"In making this decision, I have conferred with Assistant Secretary Slezak, in charge of Matériel, and with representatives of the Ordnance Corps and the supply division of the Army staff," Mr. Stevens said. "After carefully weighing all of the factors, I decided upon the award as being clearly in the public interest."

Both the Chrysler and General Motors Corporations now are manufacturing the medium gun tank. The Chrysler Corporation will continue to build the M48 at its Newark, Del., tank plant until April, 1954. When production there is discontinued, the company will maintain its machine tools in package storage adjacent to the plant in order that it may resume production quickly if necessary.

Chrysler will continue to be the vehicle design agency for the M48 tank under separate contract.

Three other plants now are making other models of tanks and are not affected by the new contracts.

The number of tanks involved in the new contracts was not disclosed for security reasons. However, Mr. Stevens revealed that the tanks would be built

Former Council Member Dies

Colonel Henry T. Cherry, Jr., 1935 graduate of the Military Academy, and a 1952 council member of the US Armor Association, died at Brooke Army Hospital on the 19th of August. As a tank battalion commander in the 10th Armored Division during World War II, Col. Cherry received the Distinguished Service Cross for extraordinary heroism in addition to the Silver Star with two clusters.

under the new contracts over a period of more than one year.

The Patton Stamp

Official information has been received by Headquarters, The Armored Center, Fort Knox, Kentucky, that Postmaster General Arthur Summerfield has designated Fort Knox for first day issue of the General George S. Patton, Jr. commemorative stamp and has set the first day date as November 11th, General Patton's birthday.

The idea for a commemorative Patton stamp was originated by the World Wars Tank Corps Association, which has its offices in Indianapolis, Indiana. Congressman William G. Bray of Indiana presented the request to the Postmaster General who approved it, and it

received further approval of President Eisenhower.

Major General J. H. Collier, Commanding General of The Armored Center, has commenced planning for the ceremonies and other preparations. Many high military officers and civilians will be invited to participate in the stamp ceremonies honoring General Patton.

Based on the experience of Fort Bliss' Centennial Anniversary Stamp issue of 1948, the Fort Knox Post Office may well have over forty thousand first day cachets sent to it for cancellation. Total commemorative sales in all probability will exceed one million stamps.

Tank Progress

Progress in the design of military tanks has been as dramatic and startling as the advances made in any other weapons since World War II, according to Robert T. Keller, vice president and general manager of tank manufacturing operations of Chrysler Corporation.

Speaking at the convention of the Fifth Armored Division Association recently, Keller declared that tanks are of more value in modern warfare than they ever have been in the past.

Keller said that military writers are now pointing out that tanks can withstand atomic explosions better than any other weapons system. In addition, he said, tanks can move in quickly to exploit atom-bombed areas with relative immunity from any radioactivity that may remain.

"In the early days of World War II, we learned the value of tanks in modern warfare. And for all the talk of push-

TOP COMMAND CHANGES



Lt. Gen. I. D. White
To Commanding General, Fourth Army



Maj. Gen. Floyd L. Parks
To Commanding General, Second Army



Brig. Gen. William S. Biddle
To CG, First Armored Division

TAPS



Major General Bruce Magruder, United States Army, Retired, died at Orlando Air Force Base, Florida on 23 July 1953 at the age of 70. Enlisting as a Private in the Regular Army, he rose through the ranks to the grade of Major General. Commissioned as a Second Lieutenant of Infantry in 1907, General Magruder was assigned to the Philippines. Following a tour on the Mexican Border he returned to the Philippines. The General's next assignment was to France during World War I. As Executive Officer of the Intelligence Section of the Headquarters of the American Expeditionary Forces, he received the Distinguished Service Medal. Returning Stateside he served on the War Department General Staff in the Military Intelligence Division. Graduating from the Infantry School in 1923 he was assigned as an Instructor at Fort Benning in the Department of Tactics. In 1926 General Magruder was ordered to the Command and General Staff School. Completing his course as a Distinguished Graduate he was assigned in the Office of the Chief of Infantry. In 1931 he was assigned as PMS&T at North Carolina State College. He was transferred to Fort Meade where he commanded the 66th Infantry Regiment, a light Tank outfit. Subsequent to an assignment at the Infantry School he commanded the Washington Provisional Brigade. His next assignment was as the first CG of our First Armored Division.

button warfare, there is no evidence that tanks and tank men will be any less important in the future," he declared.

Keller credited the design of the Patton 48, the nation's newest medium tank, to the close working relationship developed with Army Ordnance, Army Field Forces, and Chrysler Corporation engineers.

He said that a design coordinating committee made up of members from the three groups has followed every phase in the development of the tank from the drawing board to final delivery of production models.

As a result of this close cooperation, the number of major engineering changes required in the development of the Patton 48 was only one-tenth of the number encountered in the development of World War II tanks, Keller reported.

Salute to the Pioneers of Armor

At the First Armored Division Convention, held recently in Washington, D. C., the theme for the Noonday Luncheon was a salute to the Pioneers of Armor. Many of them were in attendance and many more sent messages of remembrance.

Chief speaker at the luncheon was Lt. Gen. Willis D. Crittenger, recently retired as commanding general of the 1st Army, who—like many of the other guests—was an armor pioneer in days going back to the old 7th Cavalry Brigade.

Other general officers were Lt. Gen. Geoffrey Keyes, Maj. Gen. Orlando Ward, Maj. Gen. Guy V. Henry, Maj. Gen. Robert W. Grow, Maj. Gen. Robert W. Hasbrouck, Maj. Gen. Frank A. Allen, Brig. Gen. Harry Semmes, Brig. Gen. Lawrence R. Dewey, Brig. Gen. Peter C. Hains, 3d, Brig. Gen. Edward G. Farrand, Brig. Gen. John F. Davis, Brig. Gen. L. Holmes Ginn, Jr. (MC), and Brig. Gen. William S. Biddle.

Each General Officer spoke briefly, paying tribute not only to the First Armored, but to all Armor personnel for their contributions to the successful conclusion of World War II and the strides forward made in Armor subsequent to the War to the present date. Brig. Gen. Robinett, head of the Washington Chapter of the "Old Ironsides" Association, was the chairman of the Host group.

280mm Guns to Europe

A battalion of 280mm mobile guns will shortly be deployed to Europe for use in support of the defense forces. Mr. Stevens, Army Secretary, stated that this is part of established U.S. policy to make available for the support of NATO coalition, highly trained and well equipped balanced forces. "No single weapon will solve the military problems of Western Defense or deter aggression," he stated, as he pointed out that although the 280mm gun strengthens the defense of NATO, it cannot be regarded as a substitute for other weapons and forces.

LAST CALL



General Jonathan M. Wainwright, United States Army, Retired, died at Brooke Army Hospital, Fort Sam Houston, Texas on 2 September 1953 at the age of 70. After formal funeral services at Ft. Sam Houston, the body was flown to Washington, D. C. for interment at Arlington National Cemetery, where he was buried five feet from his father's grave—Major Robert Wainwright. The General's body lay in state in the Trophy Room at the Cemetery—the first tribute of its kind since the burial of the Unknown Soldier of World War I, in 1921. Graduate of West Point in the class of 1906, General Wainwright was commissioned in the Cavalry. Serving in all ranks and at various posts of the Cavalry, he commanded the Third Cavalry Regiment at Fort Myer when he received his first star. He was transferred to the command of the First Cavalry Brigade at Fort Clark, Texas, and subsequently to the Philippine Islands. It was here that General Wainwright gained national prominence as the Commander of all US Forces in the Philippines, succeeding General MacArthur. For five months, his beleaguered forces held out against the Jap first team, for which he received the CMH, and himself became a prisoner of war. For his heroic action at Bataan and Corregidor, it may be said—to borrow a Churchillian phrase—"Never did so many (the U.S. people) owe so much to one man in those bleak days of the war."

How would you do it?

SITUATION NR 1:

You are a reconnaissance company commander in combat. You have discovered that your third platoon performs poorly in comparison with the others. Your platoon leader has a splendid personal combat record; he won a Silver Star as an enlisted man in World War II and a cluster during his first tour in Korea in 1950. You have noted that on combat missions he remains in the rear by his radio "to keep the channels of communication open" and sends his men forward. In conversation with him you note that he is completely bitter about the present state of affairs in the world and about human nature in general. He is married but gives no evidence of being bothered by marital problems. His men regard him highly, and obey him readily. They obey others indifferently and seem bitter about their lot. Replacement of this officer is not possible at this time. What steps will you take to remedy the leadership problem here?



AN ARMORED SCHOOL PRESENTATION

AUTHOR: MAJ E S WELLS

ILLUSTRATED BY PFC A P ZOELICK

SITUATION NR 2:

Your second platoon has penetrated the fortified position of the enemy without resistance to discover that the enemy has withdrawn. The platoon leader reports to you and proceeds along the road he has been following. Though the road leads directly into the former enemy positions, he meets no enemy. Unprepared for this total lack of resistance, he runs off the edge of his map into terrain for which only you have a map. He has none. What instructions will you give him concerning the reporting of his position as he proceeds?

(Turn to next page for solutions)



"How would you do it.?" solutions

SITUATION NR 1

1

Show the platoon leader that other platoons have bettered his recent record.

2

Inform him that his negative attitude has communicated itself to his men, injuring their efficiency.

3

Explain to him the dangers inherent in his failure to lead his men. Refer to his past combat record. Tell him he must lead.



SITUATION NR 2

1

Establish as a base point the point at which the road runs off the map.

2

Designate the road as a modified thrust line.

3

Indicate his position by speedometer mileage from the base point and his distance from the road right or left in miles.



FROM THESE PAGES

65 Years Ago

In the first number of this JOURNAL there appeared an article under the caption of the "New Field Artillery Gun and Carriage," in which the idea is boldly advanced that "from its lightness it is suitable though not especially designed for horse batteries." The idea that any gun not especially designed for horse artillery purposes is suitable therefor, must from the nature of things, and the practices of every military nation, be denied absolutely. The services required of horse and field batteries are quite distinct and widely separated in their character. It need hardly be specified that in one, mobility is of vital importance, without which a horse battery possesses no value to a cavalry leader; in the other, power of fire is of the first importance, as field batteries have less trouble in keeping pace and place with the movements of infantry, while power and volume of fire are required to meet inanimate as well as more powerful animate obstacles. Without this virtue the infantry commander has little use for artillery. In field batteries both of these elements can be, and frequently are combined, and in several nations a single gun is made to do duty for a single battery which performs the functions of both light and heavy batteries. But in no nation is the same gun designed to do duty as both a horse and a field gun. Everywhere the horse artillery gun is especially and carefully designed and constructed for this particular service alone. The reasons for this are perfectly obvious. The services required must first conform to the demands of the cavalry commander. His all important requisite is, that a horse battery shall under no reasonable circumstance impede his marching and maneuvering abilities, and further that in keeping pace with his arm the horses of the artillery shall maintain as good condition as those of the cavalry. In other words, that in a field of operations practicable for horse artillery its mobility shall be fully equal to that of the cavalry. Naturally the power of the gun is a matter to which he gives less consideration as celerity of movement is the secret of power.

A Horse Artillery Gun

1ST LT. A. D. SCHENCK

50 Years Ago

Another result of the Boer War has been a commission to revise the fighting tactics of the British army, chiefly to provide a method for open order fighting. A radical departure has been made from the present way, which seems to date from the day of Braddock's defeat. We did not have much opportunity to see the new tactics tried, for the orders had just been promulgated, but the formation and deployment seemed very much like our old Upton tactics. There was no using of signals, and the squad leaders caused too much noise and confusion during deployment.

As individuals, the British soldiers were far better than any others over there. They are well set up, smart looking, and get splendid training in the School of the Soldier, and they are learning how to shoot. After some long talks with Boer officers, their criticisms of the British crystallizes into the statement that the infantry during the first two years of the Boer War fired by volley, and that the individual did not know how to shoot. British officers were not well trained in finding the ranges. This applies particularly to the artillerymen. The British shrapnel did not have the proper scattering charge. Its effects were nil against troops behind breastworks. This same criticism might be made against our own shrapnel.

Notes on the German Maneuvers

LT. FRANK R. MCCOY

25 Years Ago

In war one often sees one army retreating, another army pursuing. In such a case cavalry is specially suited as a delaying force. Occupying strong points such as villages, railroad embankments, river crossings, woods, etc., it can resist until the last moment, without fear of being cut off, since its horses provide a means of escape. By proper dispositions a small body of cavalry can thus deceive the enemy into believing it is confronted by a considerable force of infantry, thus forcing the enemy to deploy, delaying him in his advance. Close country, much cover, woods, hills, etc., are favorable for such resistance, since the horses can be concealed and surprises made possible. Wooded country was the terrain in which our cavalry forces operated during the Civil War, a war in which the proportion of cavalry to infantry increased every year.

It should not too often be impressed upon the young cavalry officer that it is in the cavalry more than in any other arm that the junior officer, the captain and the subaltern, gains an opportunity for independent action. Both the army that advances and the army which retires or stands fast have their fronts covered by a line of detachments, great and small, of cavalry. In the inevitable collisions which occur, squadron against squadron, troop against troop, platoon against platoon, all the conditions of war, of campaign, of battle are produced in miniature. The officer in command must know when to charge, when to fight on foot; when to attack, when to retreat, or to charge.

The Cavalryman and the Rifle

BRIGADIER GENERAL JAMES PARKER

10 Years Ago

The chief aim of infantry-tank cooperation is to effect simultaneous blows at enemy personnel, support points, and centers of resistance. Such blows can be planned in detail and organized in advance for only the first stage of a battle. Once the enemy front line defense has been broken through and the primary objectives achieved, problems of cooperation must then be solved on the spot in accord with the ever changing battle situation.

The infantry first tries to break-through enemy defenses and take up initial positions for attack as near the enemy front line as possible in order to strike short decisive blows in cooperation with the tanks. On favorable terrain, initial positions may be some 200 meters from enemy trenches. At times, when the general situation and terrain make early concentration along initial positions for attack either impossible or inadvisable, infantry will be brought up while the artillery barrage is still in progress and will be moved forward within a kilometer of the enemy lines.

Tanks must drive through battle formations of infantry while the latter is concentrated along initial positions for attack. This moment in the coordination scheme must be thought out carefully beforehand. Infantry cannot await armored vehicles in initial positions, and tanks in their turn cannot stop until the infantry is ready. The situation may be such that the infantry will be obliged to start the attack immediately after the march. Even in that case, however, it is important to launch the infantry attack simultaneously with the tank attack. The assault begins all along the line at an hour determined by the commanding general. Depending on the distance that they must cover, the tank detachments leave their initial positions at different times, but they attack simultaneously.

Tank-Infantry Attack

MAJOR GENERAL M. KOROLEV
Red Army

The second of a series of articles from Career Management Division intended to answer various queries concerning assignments—school opportunities—openings for special assignments—and diverse questions which officers assigned to the combat arms otherwise might have.

YOUR MILITARY SCHOOLING

OF vital interest to all Army officers, and to the Career Management Division of The Adjutant General's Office, is the program of military education. This follows two general patterns, one designed on a progressive basis to develop the overall potentialities of an officer to the maximum, and the other to provide specialist training in particular fields.

Specialist courses are conducted by the branch schools, and others such as the Army General School and the Army Language School, for the purpose of qualifying officers in a variety of fields; for example, communications, guided missiles, motors, administration, supply, and languages. The various courses are listed in the Army School Catalogue, Department of the Army Pamphlet 20-21, which is published annually. Attendance is by application or selection on a quota basis to meet the requirements of the Army in each particular field.

Of more general interest to all officers, however, is the career type of Army education which begins with the basic courses in the branch schools and extends on an increasingly selective basis to the Army War College which stands at the apex of the Army's military educational system for officers.

The newly commissioned second lieutenant attends the basic course at his branch school where he receives instruction intended to qualify him for duties appropriate to a company grade officer. The basic courses are approximately fifteen weeks in length. Regular Army officers and selected EAD officers commissioned in the

Artillery, after a year of troop duty and before reaching four years of service, will attend the battery officer course of approximately 28 weeks' duration. Upon graduation they will be assigned to a different type artillery unit from the one in which they served their initial tour of troop duty.

After several years of troop duty and before accumulating twelve years of service every Regular Army officer, and an annual quota of Reserve officers, will attend the regular advanced courses of their arm or service. All other Reserve officers on extended active duty, and a percentage of Reserve Component officers not on active duty, will attend the associate advanced courses. At the advanced courses officers receive instruction peculiar to their arm or service intended to fit them for duties above the company or battery level. In addition, they receive generalized instruction to prepare them for staff assignments on higher levels.

Following the advanced courses of the branch schools, career education becomes competitive. The first school where attendance is on a selective basis is the Command and General Staff College, which conducts a Regular Course annually for Regular Army officers and two Associate Courses each year for Reserve Component officers. Each branch of the Army receives an annual quota based on mobilization requirements, in proportion to its authorized strength and prescribed mission. Based on current student quotas approximately 50% of all Regular Army officers will, at the appropriate time in their careers, be selected to attend the Com-

mand and General Staff College.

Above that college and at the top of the Army's education ladder is the Army War College. Since the authorized enrollment for the 1953-54 course is only 200 officers, it can be readily seen that attendance is on a highly selective basis. Graduation from the Army War College represents completion of the Army's formal education requirement for the assumption of high-level positions in the Army and the Department of Defense, and those which the Army might be called upon to fill with other governmental agencies.

Paralleling the Army's educational system are the joint colleges: the Armed Forces Staff College, Industrial College of the Armed Forces, and the National War College. These colleges are under the supervision of the Joint Chiefs of Staff and are attended by officers of all services. Due to the limited quotas available to the Army, attendance has been confined to Regular Army officers.

In addition to the colleges previously mentioned the Department of the Army accepts invitations annually for its officers to attend colleges of the Navy, Marine Corps, and Air Force as well as colleges of foreign nations. Quotas are limited and attendance is by competitive selection. Each of the foreign colleges is considered as being on a comparable level with one of our own colleges, and graduates are given the same consideration in selection for further schooling as graduates from the corresponding United States college. The foreign colleges presently extending invitations are listed below

together with the comparable level United States college.

National War College or Army War College Level

British Imperial Defence College

Canadian National Defence College

French École Supérieure de Guerre

Armed Forces Staff College Level

United Kingdom Joint Services Staff College

Command and General Staff College Level

Australian Staff College

British Staff College

Canadian Staff College

French Ecole Major d'Etat

Indian Defence Services Staff College

Italian Army War College

Pakistan Staff College

Other schooling, above the branch level, of increasing importance is graduate level schooling in the physical and social sciences under the Army civil schooling program. A subsequent article will cover this program in detail.

In view of the number of inquiries received by the Career Management Division, it might be well to discuss what is meant by competitive selection. All officers of a branch, in the zone of consideration established by the prerequisites for attendance at a college, are considered competitively within each branch. In order to select, from the large number of officers in the zone of consideration, a limited number to fill the quota of a particular college, it is necessary that all officers in the zone of consideration be arranged in order of merit according to their existing records. Many factors are employed in developing such a list. These include command and staff experience; combat duty; experience on school staffs and faculties; previous military education; civilian components and assignments; duty with military missions as military attaché, and duty with joint staffs or other services; promotions, demotions, and disciplinary actions; efficiency ratings; and age and years of service.

It is recognized that the question uppermost in the minds of those who aspire to attending various schools concerns the methods of actual selection. Detailed explanations would be extremely difficult. The records of all officers in the eligible groups are scrutinized by mature and unbiased

officers. The qualifications of each are checked off on work sheets. Great weight is given to command experience and demonstrated leadership. The broad pattern of an officer's experience is considered and the degree to which officers have met demands that would seem to index this future potential are evaluated with care. And of course the officer's overall efficiency index for the past five years of service, as determined from efficiency reports, carries great weight—but this is not the sole deciding factor. The method can be summed up as careful, unbiased selection based upon best available information, weighing carefully the qualifications and interests of the individual officer and the requirements of the Army. All officers can take comfort from the fact that political pressure has no weight whatsoever. The Career Management Division is always interested in receiving informa-

IN THE NEXT ISSUE:

ROTATION

OF

ASSIGNMENTS

tion as to the merits of different officers and when recommendations are submitted by senior officers they are of course evaluated with care. However, the final decision is based upon the officer's overall qualifications and his future value to the service.

It is not necessary that an officer submit an application for attendance at one of the service colleges. Officers are considered by their arm or service automatically from the time they become eligible until they pass out of the zone of consideration. Moreover, selection is without regard to geographical location or assignment. However, officers desiring to attend Air, Navy or Foreign colleges in preference to an Army college, should indicate such a desire on their annual preference cards.

Eligibility prerequisites for the Army and Joint colleges may be found in SR 350-20-1, SR 350-195-1, and DA Pamphlet 20-21. Prerequisites for the Air, Navy, and Foreign col-

leges are similar to Army colleges of comparable level. Outstanding officers may be considered for selection for a service college although they do not meet all the prerequisites for that college. Whenever, in the opinion of the Career Management Branches, an officer is outstanding and places high competitively in all other respects, a waiver is considered for the prerequisite in which he is lacking. Thus, every effort is made to select those officers most qualified who possess the greatest potential value to the service.

Due to the limited quotas, a relatively few officers will attend the high level service colleges. It must be pointed out, however, that schooling is only one means of developing potential leaders. As in the past, a number of outstanding leaders will be developed from those who may not attend a service college but who, through on-the-job training and a diversity of career broadening assignments subsequent to school eligibility, indicate by actual performance of duty a potentiality for high level command and staff positions.

This last facet of career development deserves great emphasis. It is an obvious fact that all officers cannot expect to attend our top military schools and it is equally evident that some of those selected will not necessarily prove to be our ablest officers in time of emergency. Human qualifications are not susceptible to such accurate evaluation and as a result the next emergency will find many officers who were not selected for higher schooling, who may make their way into the select group of general officers who guide our Armies in time of war. The relatively recent past is complete proof of this statement. Not all of the large number of officers who had distinguished records and the advantage of high military schooling during World War II met the requirements for wartime general officer rank, while others without such training rose to some of the very highest positions of responsibility. One of these officers who were not selected for higher schooling is General James A. Van Fleet. His distinguished record of battle leadership and civil administration should be a comfort, inspiration, and guiding influence for many who now feel a sense of frustration for not having been selected to receive more advanced schooling.

ARMOR ASSOCIATION NOTES

SINCE the annual meeting of the United States Armor Association at The Armored Center, Fort Knox, on January 30th, two special meetings of the Executive Council have been held.

The first of these meetings was held on the 31st of March. A resolution was proposed by the Association. (This resolution appears elsewhere on this page.) It was circulated, late in May, to all other branch associations for their consideration. As indicated in the context, it was intended to invite attention to the advantages of an Army-wide overall organization, devoted to the interests of the Army of the United States.

It was not intended that this proposed organization take the place of any existing branch organization, all of which serve very specific purposes within their respective spheres.

Instead, it is felt that a combined effort of all branches, including not only the combat arms but also the technical and administrative services, could serve well to represent the Army with a dignity and strength otherwise impossible.

The sole purpose of this proposed organization is to enhance the prestige of the Army of the United States.

Changes in Membership Provisions

The second meeting was held on the 31st of July. At this meeting a discussion was held concerning the modification of the membership restrictions for the Association. A committee was established to investigate the matter further and to submit recommendations at the next meeting. Prior to final action, any change will have to be submitted to the membership for a vote in view of the fact that it involves a change to the constitution.

Overseas Council Advisory Boards

Owing to the return to the United States of Generals White and Read, it was necessary to appoint new chairmen for the Overseas Council Advisory Boards. Lieutenant General Bruce C. Clarke replaced Lieutenant General I. D. White in the Far East,

and Major General L. L. Doan replaced Major General George W. Read, Jr. in Europe.

At present the members of the Council Advisory Boards are:

European Theater

Major General L. L. Doan, 2d Armored Division

Brigadier General Hamilton H. Howze, 2d Armored Division

Colonel Charles E. Brown, 19th Armored Cavalry Group

Colonel Raymond W. Curtis, 14th Armored Cavalry Regiment

Colonel Harold C. Duval, 6th Armored Cavalry Regiment

Colonel William E. Eckles, 2d Armored Cavalry Regiment

Far Eastern Theater

Lieutenant General Bruce C. Clarke, 1 Corps

Major General Arthur G. Trudeau, 7th Infantry Division

Major General Gordon B. Rogers,

The Annual Meeting of the United States Armor Association, will be held at Fort Knox, Kentucky, late in January, 1954. General Matthew B. Ridgway, Chief of Staff, United States Army, has been invited as the guest of honor and principal speaker.

MAAG, Korea

Brigadier General John C. Macdonald, MAAG, Formosa

Brigadier General William J. Bradley, 1st Cavalry Division

Lieutenant Colonel Robert B. McRae, 89th Tank Battalion

Plans for Next Annual Meeting

The next meeting of the Executive Council will be held on October 2, in Washington, D. C., at which time plans will be made for the annual meeting to be held at Fort Knox.

RESOLUTION

WHEREAS the modern ground army is a carefully balanced force of many combat arms and technical services, and

WHEREAS cooperation and teamwork among the many combat arms and technical services form the basis for battlefield success, and

WHEREAS for many years the professional military associations of the respective combat arms and technical services have through the promotion of branch understanding, contributed substantially to the effectiveness of the army team, and

WHEREAS there exists no professional military association with periodical in which all members of the combat arms and technical services may meet on a common ground

NOW, THEREFORE, BE IT RESOLVED, that the United States Armor Association propose consideration of the formation of an Army-wide military association to operate in the general area outside of existing branch associations, with membership to be open to all military personnel, irrespective of branch, rank, or existing affiliation, and

BE IT FURTHER RESOLVED that the proposed association be organized, not to replace any of the existing branch associations, but to supplement them instead and thus contribute to further unification within the Army, and

BE IT FURTHER RESOLVED that the proposed association be in addition to and separate from the existing branch associations, representing the overall Army view and dedicated to the interests of our country's defense.

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THE BOOK SECTION

Increased savings
5% discount on orders up to
\$5.00
10% discount on orders from
\$5.01 to \$10.00
15% discount on orders from
\$10.01 up
PREPAID POSTAGE: When
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Stilwell's Mission to China

STILWELL'S MISSION TO CHINA. By Charles F. Romanus and Riley Sunderland.

Reviewed by
THEODORE H. WHITE

This correspondent has been following the United States Army at home, in Asia, and in Europe for some fifteen years—a period long enough to have inured him against any surprise at its multifarious activity. Certainly, no demonstration of its courage should startle him.

Rarely, however, have I observed an act of greater bravery performed by the United States Army than that of publishing, as one of its official histories, a book called *Stilwell's Mission to China* by Charles Romanus and Riley Sunderland.

This book is much more than the usual army treatise on a theater, a campaign or a mission. It is more than a generous and long-overdue tribute to a great soldier. It is an honest, bare-handed examination of the most explosive subject of American foreign policy—our relations with China and the Generalissimo of the Chinese armies, Chiang K'ai-shek. In

this political mine-field, on whose booby-traps so many distinguished American careers have been blown to bits, even the hardest civilian writer proceeds with caution. The army's historians have, however, charged ahead uncovering documents, exposing scandal, revealing truth in the most hotly-debated area of American emotion as if completely unaware of and indifferent to the political peril or disturbance of their action.

The justification of this attitude is, of course, simple. Histories are written to tell the truth so that those who come after may learn and benefit. *Stilwell's Mission to China* is written

The Reviewer



Theodore H. White, European Correspondent for *The Reporter*, is Editor of *The Stilwell Diary* and co-author of *Thunder out of China*, a 1946 Book-of-the-Month Club selection. His latest book, entitled *Fire In The Ashes*, is a current Book-of-the-Month Club selection. It is the result of five years study in Europe.

The Authors



Charles F. Romanus, noted historian, and co-author of the book, *Stilwell's Mission to China*, served as an Historical officer in the China-Burma-India Theater during World War II. He is presently in the Historical Section of the Quartermaster General, Department of the Army.



Riley Sunderland, noted historian, and co-author of *Stilwell's Mission to China*, served in the Historical Section, Headquarters US Army in India. He is presently a member of the writing staff of the European Section, Office of the Chief of Military History, Department of the Army.

All photos—U.S. Army



Stilwell with his trademark, the old campaign hat, arrives at Chungking airport.

not to entertain, or to curry favor, but simply to illuminate the chief problem the United States Army faces in the future. The best definition of this problem is probably that of General Alfred M. Gruenther, SACEUR at SHAPE, who declared offhand one day "there are only two kinds of wars—Indian wars and coalition wars. All wars of the future are coalition wars and we have to learn how to fight them." In learning how to seek Allies in coalition, hold them, and

fight effectively by their side, we have, by now, solved the problem of coalition in Europe by such enormous structures as SHAPE and NATO. We have not yet solved the problem in Asia. And any soldier whose career brings him to decision and action in the Orient might well begin his search for a solution with a study of the Romanus-Sunderland work.

The story of *Stilwell's Mission to China*, though heavily detailed and documented with complex scholarly

precision, is, essentially, a simple one. It is the story of how the United States sent Joseph Stilwell to shake alive the vast, pulpy mass of Chinese soldiery under Chiang K'ai-shek, "to improve its combat efficiency." Strategically, Stilwell's mission was to create a supply system across India in order to support an effective Chinese army which might win back the continental land mass the Japanese occupied, and provide a platform on the China coast for sea and airborne assault on the Japanese homeland.

As is proper and demanded by the record, the authors begin their story not on that day in February, 1942 when Joseph Stilwell left Washington for Asia, but early in 1940 when the United States first began to seek the re-vitalization of the Chinese armies as a counterweight to Japan in the Orient.

For a year and a half before Stilwell set out for China on his grand mission, long before Pearl Harbor, the United States had been wrestling with the problem of equipping and training the Chinese armies. All the elements of the problem that were later to plague Stilwell and cause American politics to boil were already present. There was the simple, technical Chinese ignorance of modern war—their insistence, for example, on American delivery of tanks which could not possibly traverse the light bridges of China and Burma. There was the irrational element of face, the refusal of the Chinese to accept standard American rifles which they desperately needed because they would lose "face" if they did not get the new Garands of which the U. S. Army was critically short itself. There was the discovery of the great graft system, then flourishing about the Burma Road, China's lifeline, clogged with private cargo, profiteering, and official racketeering and red tape. There was, finally, the flair of the Chinese nationalists for Washington intrigue, and their discovery that the Army of the United States could be circumvented in political maneuver in the White House, the Congress and the press.

By January of 1942, when the United States was already in the war, the situation in Asia had become so grave that drastic measures were needed. Jointly, Secretary of the



After air raid on Myitkyina airdrome, the General awaits the all clear signal.

Army, Henry L. Stimson, and Chief of Staff George C. Marshall, decided that the war in the Orient was so critical as to warrant the transfer of General Joseph Stilwell (already assigned to prepare and command the North African invasion) to be Chief of Staff to Chiang K'ai-shek and Chief of all U. S. Armed Forces in China-Burma-India. His mission was to pull together the war effort on the Asian mainland, or, as his blunt diary records "get various factions together and grab command and in general give 'em the works."

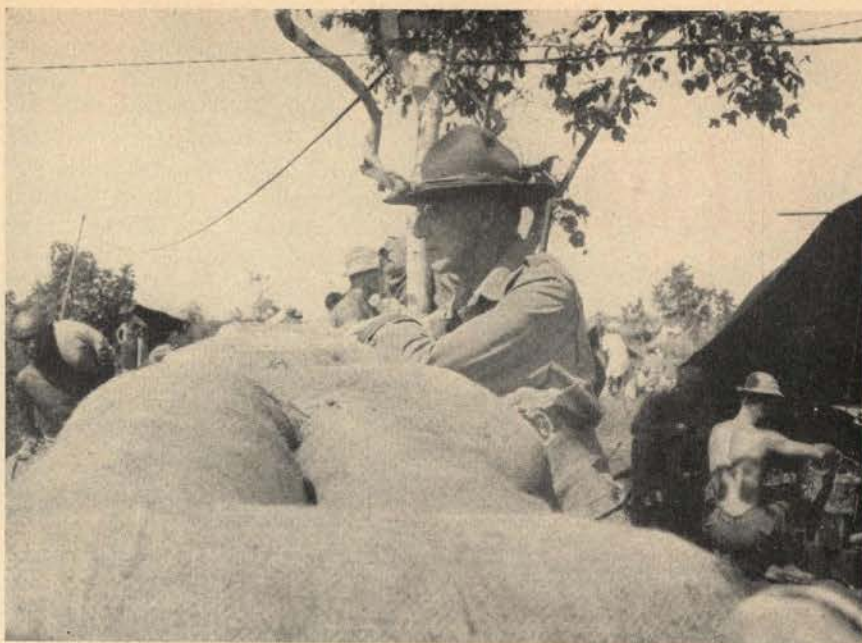
The main narrative of the Romanus-Sunderland book falls, thereafter, into three natural sections.

First, is the account of the Burma campaign of 1942 and the evolution of strategy in the year and a half that followed. This account is chiefly valuable for the light it throws on Stilwell's qualities as a tactician and field soldier, superb qualities doomed to be wasted as was so much other talent in the swamplands of Asian politics.

Next comes the chronicle of Stilwell's effort to wrestle his reluctant coalition partners—the British and the Chinese—into offensive action.

Here, in this section, the authors, with access to all the army's documents, offer a picture of Chinese Nationalist life and morals which is all the more devastating for the dry and wooden exactitude with which it is set down. To make a Chinese Army out of the sick and hungry peasant conscripts that Chiang offered him after endless delays, Stilwell found himself plunged deep in Chinese politics. He found, for example, that General Lo Cho-ying (one of Chiang's favorites) sent to command the new Chinese Army being trained and equipped by Americans in India wanted 450,000 silver rupees (his soldiers' payroll) paid in a lump sum to him each month, "the customary procedure," as the authors drily point out, "which permitted large amounts to stay in the commanders' pockets." When Stilwell insisted that the 270,000 rupees (all that was actually required in soldiers' pay) be paid directly to the soldiers themselves, Lo was infuriated and had to be relieved and returned to China.

All down the line, Stilwell's subordinates found themselves caught in the same racketeering system, a com-



Stilwell looks across parapet of General Merrill's command post at Myitkyina.

pound of cupidity and China's endless poverty. Scores of facts—some humorous, some grim, some tragic—are fitted into a mosaic picture of the Chinese war effort. Chinese officers tried to shake down civilian contractors working on American projects. On several occasions truck drivers on American-supplied trucks drained the brake-fluid to sell in the black market. On some American building projects in China it was necessary to count the nails issued to carpenters and account

for every one driven in. American officers attempted to teach the Chinese modern artillery fire methods at an artillery training center; they found the pack-animals in wretchedly poor condition. Says the Army report on the situation "The Chinese are very reluctant to graze their animals for fear of losing both animals and soldiers through desertion."

To one who, like this correspondent, served in the war area at the time, some of the facts first published now



With the Chiang K'ai-sheks the day after Japanese bombing at Maymyo, Burma.

SHERIDAN

The Inevitable

by

Richard O'Connor

Of the four great Union commanders in the Civil War the youngest, the most aggressive, the most versatile and the most uniformly successful was Philip Henry Sheridan. Bold yet cautious, thorough yet unexpected, Sheridan continually hit the Confederates where it hurt. They couldn't outguess him, outgeneral him, outfight him—and they couldn't avoid him. No wonder they called him Sheridan "the inevitable." He outwitted and outfought the Southern idol, Beauty Stuart, at Yellow Tavern, smashed the Confederate horsemen and killed Stuart. In the Shenandoah he soundly defeated Early in a series of battles, culminating in his famous ride to turn the Confederate surprise attack at Cedar Creek into a decisive Union victory. At Sailor's Creek he cut out and gobbled up a large segment of Lee's disintegrating army. In the end, with infantry as well as his cavalry, he was out in front of Lee and astride his last escape route.

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are heartbreaking. Such, for example, is the revelation that during the eight months from July 1942, to February 1943, when American boys were dying flying old transport C47s across the great Himalayan spurs called the Hump, nearly one-tenth of the supposedly essential war supplies they were ferrying consisted of bales of Chinese paper currency, printed in America on demand, to keep Chinese inflation going on crisp, crinkly new banknotes.

The authors record, though with lesser detail, Stilwell's problems with the British and the tedium, inertia, and red tape of the Indian colonial system that clogged his supply lines and paralyzed his preparations for attack. It should be noted, to the authors' credit, that all these facts are set down cold in this book, without malice or bitterness, as much in pity as in devotion to the task of informing America.

The last and most dramatic section of the book concerns itself with the conflict over strategy between General Stilwell and his nominal subordinate General Claire Chennault. This conflict centered on the familiar clash between the advocates of air power and ground forces. Chennault claimed that his heroic handful of planes, banded in the China Air Task Force, were the only American striking force close enough to Japan's vitals to hurt. Further, he claimed that, given enough supply, his Task Force could

so cripple Japanese shipping lanes with sea-sweeps off the China Coast as to cause all the Japanese Empire to fall apart. Stilwell insisted that if Chennault's raiders—based in East China—ever began to hurt the Japanese seriously the Japanese would react in a massive land campaign to wipe out all the airbases within range of the coast, and that the Chinese ground forces were incapable of stopping such a push. The hub of the struggle revolved about the Hump's limited air-transport allocations. Both Chennault and Stilwell required the same supplies for their strategy—the limited air-cargo hauled over the Hump. If sufficient equipment and training supplies were apportioned to regalanize the Chinese armies, not enough would be left to fuel and arm Chennault's planes. On the other hand, if sufficient quantities were apportioned to give Chennault his chance, not enough would be left to support the Chinese ground forces against the Japanese attack the planes would provoke.

This argument was common knowledge in the C-B-I theater at the time and was honestly, if heatedly, debated by dedicated men. Both the Chennault and Stilwell theses could be sustained by valid argument. What was unknown then and is here revealed for the first time are the full details of the method by which Chennault won his victory over Stilwell. With the support of the Chinese



Pausing for a breather, the General chats with E.M. on North Burma front.

ARMOR—September-October, 1953



At the C.P. of the 77th Infantry Division during an inspection trip on Okinawa.

government against Stilwell, and with the aid of personal friends in Washington, Chennault, by 1943, had come into direct communication with the White House. Indeed, by early 1943, President Roosevelt had invited Chennault to write and communicate with him directly, by-passing not only Stilwell, but Marshall and Stimson as well. In such a situation, Stilwell's effective command of his own theater was impossible and, at this point, in the fall of 1943 the authors end their history of Stilwell's mission.

It is regrettable, but understandable, that the authors should have chosen this period to bring *Stilwell's Mission to China* to a close. The dramatic events that followed in 1944 in China are so intricately involved in contemporary politics that not for many years will we be able to review them dispassionately. Great success was to follow in 1944 as Stilwell forged the crack Chinese armies which drove the Japanese out of northern Burma and proved, as we have learned since to our sorrow, how well the Chinese can fight when efficiently led. Great disaster was to follow, too, as Chennault's planes stepped up their raids on Japanese shipping and provoked the massive Japanese East-China campaign which cost us all our coastal bases as Stilwell had predicted. And, finally, personal tragedy was to cap Stilwell's mission when, in October 1944, he was relieved of command and sent home

because of his prophetic conclusion that China would ultimately fall under Communist and Russian leadership in the future unless the U. S. immediately forced Chiang to reform or replaced him with other Chinese leadership more able to serve Allied ends.

All these historic events of 1944 are excluded by the arbitrary ending of this book. But their background and sources are so clearly detailed and illuminated in the Romanus-Sunderland work that no serious student of the Far Eastern war or politics will, in the future, be able to hold an opinion without having read *Stilwell's Mission to China*. The United States Army's Historical Section is to be congratulated for its contribution to learning.

There is no moral or conclusion at the end of this volume, for history when it is best written lets every reader make his own judgment. The lay reader will probably end this book with the inescapable lesson that wars and coalitions are not matters of military technique alone. He will learn that the greatest military talents can come to naught unless they are supported by wise and effective political leadership. He will learn that no soldier, however brilliant and dynamic, can succeed unless great civilian statesmanship offers him reciprocal wisdom and loyalty.

The lessons of history should never be forgotten.

STONEWALL JACKSON

and the American Civil War

by

Col. G. F. R. Henderson

Stonewall Jackson developed into one of the great strategists of military history. From his first engagement in 1861, until he fell mortally wounded at Chancellorsville twenty-two months later, his brilliant exploits struck terror into the North; his strategy immobilized huge forces of the enemy and kept them on the defensive; he struck swiftly and decisively from the most unexpected and impossible quarters; with starved, ragged, barefoot troops he overwhelmed the immeasurably superior forces of the enemy. When he fell, it was as if Lee's right hand had been cut off—from that moment the fortunes of the Confederacy began to decline.

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to shape plans and build and deploy an Army to meet the threat. They show clearly how the basis of war strategy was laid with the British in the prewar period, and how and why it was decided to "beat Germany first" while pursuing the strategic defensive against Japan. The principal steps taken from the autumn of 1938, when planning officers first took into serious account the possibility that the United States might become involved in a world-wide coalition war, to the agreement early in 1942 eventually to cross the English Channel and the decision to invade North Africa, are related in detail. The 382 pages of this work describe the planners' hopes, frustrations and fears, their struggles to keep plans realistic despite the myriad unknowns and uncertainties of war, and amid the often divergent aims and interests of the services, the President and the Allies.

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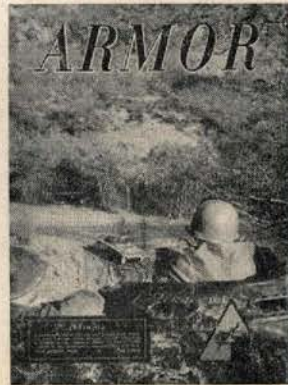
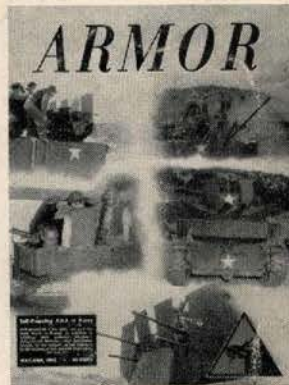
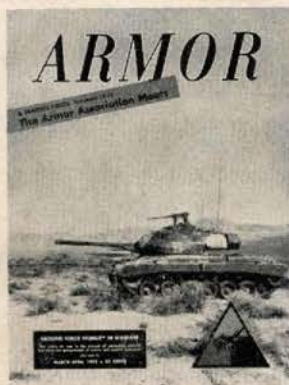
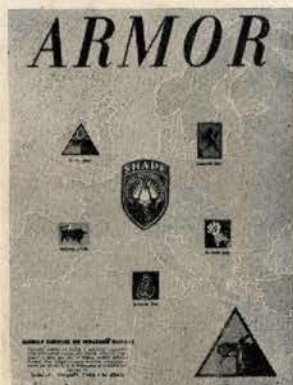
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ARMOR, the only journal of the military art and science devoted to the coverage of mobile warfare, depicts above the covers of the first four issues of this year, and in typical fashion tells the story of modern warfare in the self-propelled field.

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(See Page 6)

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So far as is known, this interview did not actually take place and the characters are fictitious. However, junior officers, aspiring to command responsibilities, will do well to emulate these qualities of outstanding leadership as evinced by the results obtained through the continuing and untiring efforts of the Company Commander, Captain Smith.

me to have definite policies on how to deal with certain situations, problems, and events. My "policy file" isn't elaborate; it consists of a few pages in my notebook, and a lot of it I carry in my head. I don't think it is essential that my men know exactly what all my policies are; but I do want them to feel that I am taking action according to a plan, and not just according to how I feel that day. For example, I try to be at least somewhat consistent in the matter of non-judicial punishment, and not to give one man two weeks extra duty for an offense while another man, with a similar record, gets only a reprimand for a similar offense.

Another thing I try to do is to keep my men informed, as much as possible, about what is going on. Anyone who has ever been in a command position knows how easy it is to attend a briefing, be it for an attack or an inspection, then unthinkingly come back to his unit and giving orders without ever explaining why these orders are being given, what their result is expected to be. I find that by calling my men together and going over with them. On the other hand, I get more efficient because they are in position to take action if something doesn't turn out as planned—because they know the end result is expected to be what there is immeasurably more confidence among my men when they know what we are aiming for—what is the natural.

Perhaps I can illustrate this. Suppose you and I are in Bentonville. Jonesburg is 10 miles away over a steep ridge; there are no roads between the two places, only a few trails. I give you a small package and say, "Take this to Dr. Doe in Jonesburg." It is likely that you

all day to get there. If I add, "It is important that the package reach Dr. Doe as soon as possible," you will hurry right along and make pretty fair time. But if I say, "The package contains serum which can save the lives of 50 people who are desperately ill," you will knock yourself out to get there faster than anyone would think humanly possible.

This psychology works on most humans, including those in the Army. Yet I have seen a great many commanders who expect enthusiastic, backbreaking effort from their men in response to a directive that has no

anything about how you build your company up to a peak just at the right time to enable you to make such fine ratings in your inspections.

Capt. Smith: I haven't said anything about that because I can't. I don't have outstanding peaks of performance if I can help it, because a peak usually means a depression either before or after it. My experience is that once a unit is rolling along, it rolls easily. If it is a good company, the men know it and take pride in it; then they'll work that much harder to keep it good and to improve it. Momentum, once gained, can be

RECENT ARMOR DEVELOPMENTS

FROM time to time new pieces of equipment are revealed to the general public. On occasion the entire vehicle, if it is a vehicle being displayed, will be new. On the other hand it might be an adaptation to be installed on a piece of equipment already in use. Here we have depicted both types. One type is a brand new British tank and the other three are new adaptations for standard American vehicles.

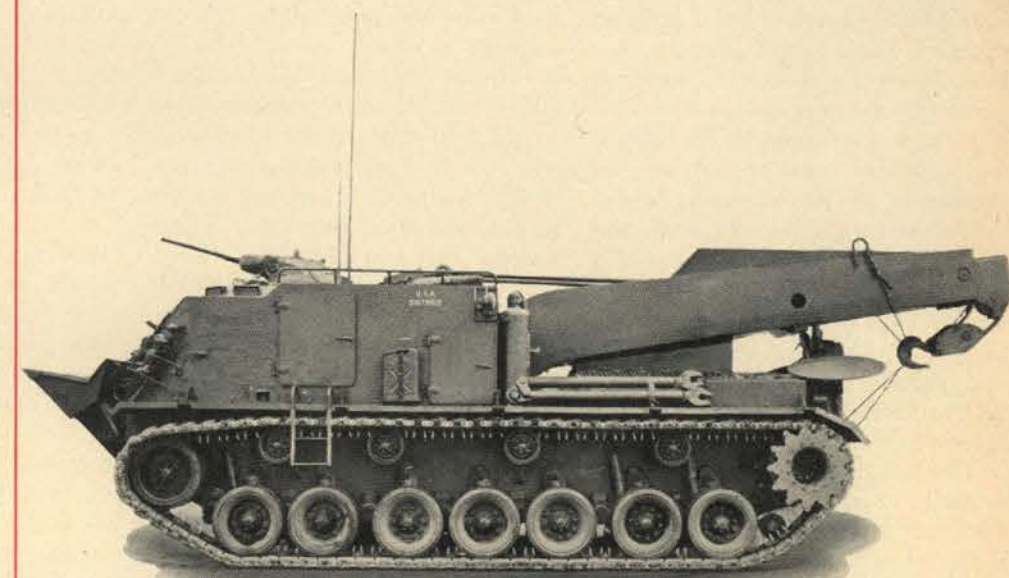
In the upper left-hand picture is the "Cærnarvon," the new heavy tank of the British. Official details on this vehicle are scarce, but the British Information Service, who supplied this photo, state that it has better armor and a more powerful engine than the "Centurion." This new tank will probably complement the already tested "Centurion" rather than replace it. The "Cærnarvon" will soon undergo exhaustive trials both in England and abroad.

In the lower left-hand corner is depicted the M48 Medium Tank with a blister-type machine-gun mount which was designed by the Detroit Tank Arsenal and approved by Army Field Forces to reduce the casualties in the ranks of tank commanders. It permits operation of the gun without exposing the gunner. This new turret-type mount provides for all around battlefield surveillance, aiming, firing, clearing jams, reloading, and even for replacing the gun or sight without requiring the commander to expose himself. The mount is operated manually.

In the upper right-hand corner, the T141, primarily an Antiaircraft weapon, is shown for the first time. It consists of twin 40mm guns (the Americanized Bofors), mounted on the chassis of the Walker Bulldog light tank, the M41. Each gun fires two-pound projectiles at the rate of 120 rounds per minute to a range of three miles. This weapon is one of five ordnance items built on the same chassis. It exemplifies the effort of the Ordnance Corps to reduce the variety of engines, transmissions, etc., in order to simplify the production, transportation and supply problems of the Army.

In the lower right-hand corner the T51 recovery vehicle is shown. The T51, our largest recovery vehicle, was conceived as a means of saving both a disabled tank and its crew under fire. It consists of an M48 tank body carrying a power boom capable of handling our medium and heavy tanks in recovery operations. It is powered by an Ordnance-Continental engine, air cooled, super charged to 1000 horsepower. The load hoisting capacity is 30 tons. THE EDITOR.

(Photos—Courtesy of BIS and US Army)





by **BRIGADIER GENERAL PAUL M. ROBINETT**

Adequate engineer support is essential to the maintenance of Armor's mobility. To keep abreast of constant changes is a continuing challenge to Armor and Engineer personnel.

ARMOR'S ENGINEER PROBLEM

THE tracked vehicle gave the Army increased cross-country mobility but it also made new and very enlarged engineer problems. Some of these problems were satisfactorily solved before or during World War II but many probably still remain today. Even a superficial nontechnical survey of the problem should serve a useful purpose at a time when the future of American ground force organization and concepts of battle remain in the balance and when we are more than ever on the defensive. It is especially important to study the training and planning phases before the opening of a campaign and the meeting engagement where the training and planning are put to the test. A comprehensive and exhaustive study would be a major undertaking and far beyond the scope of this article.

The ponton bridge was very successfully employed in the American Army as early as the Civil War, where it played an outstanding role in General Grant's campaign which brought the conflict to an end. Continuing as a favorite for river crossings, it was

not greatly modified until modern equipment made this necessary during and after World War I. But even these first improvements were not adequate for the heaviest equipment of World War II. For a time, however, existing bridging equipment and not tactical considerations had a dominant influence upon military characteristics of cross-country vehicles, which the mechanical genius of the automotive industry made possible. In the end this restrictive influence was overcome and a new bridge was designed capable of carrying modern tactical equipment required in organization. This was the armored engineer ponton bridge, the brain child of Maj. Gen. Lunsford E. Oliver, who, at the time, was the Armored Force engineer at Fort Knox.

The armored engineer ponton bridge developed prior to United States entry into World War II proved its worth on many occasions throughout the war. A rather unexpected one was in connection with the landing of Combat Command B (CCB), 1st Armored Division, on the coast of Algeria in November 1942. Over the objections of the Royal Navy the bridge was successfully married up with three British prototypes of the landing ship tank (LST) and,

with the assistance of improvised waterproofing, was responsible for placing approximately 130 combat vehicles and personnel ashore in a very few hours. This was a feat that could not have been anticipated either by the French or by the Germans and was largely responsible for the early collapse of the relatively strong defenses of Oran. Prior to the landing in Africa, American doctrine had naturally conformed to American equipment and water transportation. It contemplated the landing of tanks on the beaches from boats only capable of landing single tanks. The mass of armored equipment would be unloaded at docks after they became available. After Dunkirk the British, responding to the suggestions of Churchill himself, with commendable imagination had developed three LST's from shallow-bottomed tankers used to transport oil from Venezuela to the refineries at Aruba and Curaçao. These were the ships available to CCB. But without General Oliver's ponton bridge equipment carried as a deck load and launched over the side of the grounded tank carriers and without waterproofing the reduction of Oran would have been a slow business.

The unprecedented success

BRIGADIER GENERAL PAUL M. ROBINETT is presently Chief of the Special Studies Division, Office of the Chief of Military History, U. S. Army.



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LETTERS to the EDITOR

The Story of The U. S. Cavalry

by
Maj. Gen. John K. Herr
and
Edward S. Wallace

Here, graphically presented in text and pictures, is the colorful history of the U. S. Cavalry—from its modest beginnings in the Revolutionary War, through its abolition, so far as the horse was concerned, in 1942, to its mechanized operations in the Korean War.

Major General John K. Herr, USA (Ret.), the last chief of the service, together with Edward S. Wallace, has drawn an authoritative picture of the Cavalry's days of glory—fighting the British, policing the frontier, warring with the Mexicans and Indians, protecting our westward expansion, assuming a major role on both sides in the Civil War, breaking the resistance of the Sioux and Cheyennes, skirmishing with lesser tribes, taking part in our foreign wars, and finally giving way to tanks and armored vehicles.

Price **\$6.00**

Our Unit Pride

Dear Sir:

I have just finished reading the article "What's Wrong With the Regulars?" in the October 31st issue of the *Saturday Evening Post*, and I have a few comments to make. Why can't we resolve our own problems and difficulties before they become material for articles in mass circulation magazines?

Why can't we get unit pride back in our units? Let's let a man be proud of his regiment, battalion, or company; let him stay with the colors he started with, let him enlist in a regiment.

Let the sergeants be sergeants. Let the sergeant major be a sergeant major and a first sergeant a first sergeant. Let the Company Commander make and break. Efficiency will increase tremendously. Quit making second lieutenants do jobs a corporal could better handle and probably would do a better job—if we can't do our job get rid of us. If noncoms were allowed to be noncoms we wouldn't need so many officers.

Let Armor officers and noncoms wear boots and breeches and carry not a swagger stick as the Marines, but a quirt. After all do we not carry on the traditions of the finest of the old branches—the Cavalry? The 4th FA Bn (Pack) at Camp Carson, Colorado, wear boots and breeches and I've never run into such spirit.

All of this and many more things would tend to increase the *esprit de corps* of the army and would strengthen in us the realization that love and belief in, the ideals of DUTY, HONOR, COUNTRY are greater than even the so-called "fringe" benefits, for they are what made this country great and free.

ROBERT S. THOMPSON
2d Lt., Armor

Fort Knox, Kentucky

Combat Tanker's Badge

Dear Sir:

I write this letter to you in the hopes that you can supply the information I desire.

Since my arrival in Korea, I have been assigned to a tank battalion and most of my combat time has been as a tanker.

The infantry has a combat badge to show their recognition of being an infantry soldier in combat. Has the armor branch adopted anything similar to the infantry? I have heard various stories from armor men and some say that we have what is known as a combat tanker's badge. Is there any authorization for such an award?

Hoping that you can answer my questions or direct me to the proper source for this information.

CORPORAL RONALD SCHNEIDER
7th Recon. Co., 7th Div.

APO 7

● A check with the Pentagon reveals that there is no authorization for the wearing of a Combat Tanker's badge at the present time. If we hear anything to the contrary we will be only too happy to report it to you.—Ed.

A Mobile Minded Quartermaster

Dear Sir:

Due to the importance of supply and service to the successes of mobile forces, it has seemed to me that greater stress could well be made by ARMOR upon experiences of personnel engaged in these little-seen, little-heard, and little-thought-of factors in armored operations.

Those officers and NCOs assigned to armored units overseas may tend to forget their counterparts in the reserve units in the States. Having just returned from a Quartermaster unit supporting

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Rates: See bottom of contents page.

Seventh Army, I can authoritatively state that there is a definite lack of opportunity to develop procedures and theories in supply and service here—comparing Stateside opportunity to that overseas where constant exercises in the field provide the professional officer and NCO a laboratory.

It is the personal experience in performing supply and service missions which, when mulled over, organized, and finally put down in black and white can stimulate others in the field. The journal, *ARMOR*, should be a convention of ideas in all factors contributing to the success of that arm in the field. Surely it must be recognized that Quartermasters trained to think in Infantry, Artillery, or Quartermaster terms are not as adaptable or contributive to mobile thinking as those Quartermasters developed on wheels.

Supply and Service personnel should be able to hear what mobile warfare needs, even if it is only expressed as wishful thinking. Necessity is the mother of invention, of course; a chain is no stronger than its weakest link.

ALFRED A. AYA, JR.,
1st Lt., QMC-USAR

Portland, Oregon

Traditions of the Spanish Army

Dear Sir:

The Spanish army actually has a strong world-ranging tradition! From its conquest of Granada (1492) down to the end of the Thirty Years War (1648), it was not only the first modern army, but also the outstanding one. It took over Mexico and Peru, dominated Italy and the Netherlands, traveled up and down the Rhine, and in one single action lost six men to 6,000 Dutch militia.

Some of the present Spanish regiments sailed with the Spanish Armada (1588), although actually a plurality of the Armada troops were German Landsknechts and there was a large Italian condottieri contingent aboard. Castilian light horse, with Arab steeds, were on the sad trip, these to ride rings about the vestigial English knighthood

with its heavy Percheron draft horses, all Spaniards having fire-arms (at which they excelled), while the English relied nostalgically on the celebrated long-bow.

Spanish troops (The Blues) served against Russia, too, in 1941-42, where they excelled in cruelty and maltreatment of animals. They fought the 'Spanish' Americans fairly steadily from 1808 to 1898, and were badly beaten by the Riffs in Morocco in the early 1920's (at Annual). What they will do next, remains to be seen. Wellington once said his alliance with Spanish guerrillas was the thing he was most ashamed of.

DR. ROGER SHAW

Hartford

An Objective Game

Dear Sir:

I have been reading *ARMOR* for some time now and, for the benefit of other readers, I would like to pass on a little game that I play which I think is very helpful in getting what is called the "meat" out of an article.

I keep the last issue and when the latest one arrives I read the "Letters to the Editor" column first. These letters are sometimes critical, or present a different view from that of the author of the article. I try to remember what my own views were toward the article and compare them to see if we agree. This does not happen often. I then go back to the old issue and re-read the article to see if I can find out how the letter writer arrived at his objection or views.

This little game provides me with many new slants which I did not catch when I first read the article and I think helps me get more out of the article than I would otherwise.

Maybe some of the other readers would like to try my game and let you know what they think about it.

HARRY J. ANDERSON
Major, *Armor*

Headquarters, MDW

• *This sounds like a good idea. Let's hear from more of our readers.*—ED.

The Custer Myth

by

Col. W. A. Graham

For over three-quarters of a century the battle of the Little Big Horn has furnished a richer field for controversy and speculation than any other single event in American History. In unraveling the story of the battle in which General Custer and five companies of the 7th U. S. Cavalry died at the hands of the followers of Sitting Bull, no two writers have ever been able to agree.

Recognizing the imperative need for a documented source book that would impartially present original source material, unbiased by interpretations and misconstructions, the author has herein assembled a fascinating and absorbing feast for students of Custer's last battle, much of it never before published, which the publishers feel justified in describing as the "source book to end all source books" on Custer.

Price **\$10.00**



THE COVER

This photograph, taken in Austria, shows a tank section leader on guard during a recent maneuver held in USFA. So stands "The Armored Sentinel" ever vigilant to meet any emergency should the cold war boil over. Thereby he joins other members of the team composed of all branches and all services.

UNITED STATES ARMY
THE CHIEF OF STAFF

17 November 1953

Dear General Crittenberger:

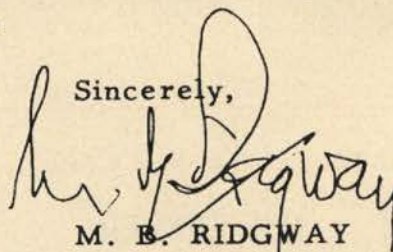
I recently wrote to the Association of the U. S. Army, of which I have long been a member, to express my view of the importance of the Association's work and to encourage its continued support by all of us in the Army.

I also want to express my great interest in your association and every association which is dedicated to advancement in the fields of the various arms and services of the Army. I know of no more significant bond between men and women who have the progress of our Armed Services at heart than to be fellow members and supporters of these outstanding organizations. To join an association of this nature and participate actively in its functions means to promote cooperation and good will, to exchange and disseminate valuable professional information, to develop esprit and mutual respect - in effect measurably to strengthen the national capability for defense.

In particular, I want to emphasize the role of the association journals. These journals not only make a significant contribution to current thinking in the arms and services but provide a unique opportunity for the professional development of the contributing members.

I strongly urge the support of these fine military associations and their outstanding publications.

Sincerely,



M. B. RIDGWAY
General, United States Army
Chief of Staff

Lieutenant General Willis D. Crittenberger, USA-Ret.
President
U. S. Armor Association
1727 K Street, N. W.
Washington 6, D. C.

The letter on the opposite page, received from General Matthew B. Ridgway, the Army Chief of Staff, addressed to Lieutenant General Willis D. Crittenberger, our Association President, is self-explanatory.

This recognition by the Army Chief of Staff of the aims and purposes of the United States Armor Association, and his willingness to take time from a busy schedule to inform us of his feelings is deeply appreciated.

Our primary mission is to serve the Armor arm, the United States Army, and therefore our country, in this special phase of warfare with stress on mobility.

General Ridgway's confirmation of our beliefs is reassuring, to say the least; and the Association, through its publication *ARMOR*, proudly contributes to the defense of our nation.

His expression of interest in all the associations dedicated to the advancement in the fields of the various arms and services of the Army serves as a stimulus to those so devoted.

Branch journals of the military profession have flourished since the initial publication of *The Cavalry Journal* (the forerunner of *ARMOR*) in 1888. They have served as an adjunct of official publications throughout these many years and have encouraged many readers in the advancement of the art of the military.

In view of the fact that material for publication in *ARMOR* is submitted

gratuitously by our authors who desire to share their experiences and views (without the spur of monetary payment) in the furtherance of the military profession, we feel confident that we are on the right course. The man who has experienced the realities of war may express himself within these covers; and here, also, the man who in the future might be confronted with similar circumstances may profit from those who have served before.

As long as we are imperiled by a force with an almost unlimited source of manpower from which to draw, we must rely upon the strength which rests in American industry. We must capitalize upon this potential to increase and sustain our mobility. We must possess a sufficient standing force, ready to expand on a moment's notice should the occasion arise, in order to derive full benefit from our civilian industrial capabilities.

To keep abreast of changes and to be well informed is the mission of every officer and noncommissioned officer in the Regular establishment, Reserve or National Guard. If, in our small way, we are providing information to our membership in their search for professional knowledge and, at the same time, are apprising others of the highly specialized field of mobile warfare, we feel that our efforts are not in vain.

The fact that the Army Chief of Staff is cognizant of our endeavors leads us to believe we can rightly say that we also serve.

The Editor

Notes on the Training of an Armored Division

by **BRIGADIER GENERAL HAMILTON H. HOWZE**

Introduction

THIS series of articles does not purport to be a complete treatise on the training of armor. The manner of that training is specified in official manuals; however, it has been found very desirable to supplement the manuals with a series of "Training Notes" published to all elements of the 2d Armored Division. Together with the standard Army publications, the Training Notes constitute the training doctrine of the division. The notes are particularly applicable to the training mission of the 2d Armored and to the terrain and weather of western Germany, which approximates that of Maryland and Pennsylvania if one will add a liberal dosage of cold rain and considerable fog and haze.

These articles will draw heavily on the Training Notes and on the 2d Armored Division Battle Drill Manual.

Battle Drill

A complete battle drill has been formulated for the tank, armored infantry, reconnaissance and engineer units of the 2d Armored Division. The drill has been published in loose-leaf form to permit ready substitution of changes and the insertion of new ideas. Each unit of the division is required to maintain proficiency in the battle drill specifically applicable to it, and in its part of the battle drill for the combined arms.

Battle drill is subdivided into extended order drill and tactical battle drill. Actually in our training the two are combined to such an extent that the division between them becomes practically indistinguishable.

Our manual makes no attempt to define battle drill, and thus avoids argument. It is our belief that practice in battle drill as we have developed it will teach us how to do quickly and easily, by drill, what we must do often

in battle. The objectives are speed and coordination, in order to attain quick (and violent) effect on the enemy.

Ordinary infantry close order drill was once battle drill. In the days of close order combat, wherein one army in solid formation confronted another, at arm's length, the two masses maneuvered per regulations governing their close order drill, and then, presumably applying their manual of arms ("Present Battle-Axes!"), commenced a chopping and stabbing process that ultimately provided a decision.

The modern idea of battle drill is not new—indeed the name itself is copied from the British, who used battle drill to train their formations in World War II. British battle drill, developing fairly elaborate solutions for a large number of specific circumstances, was somewhat more complicated than is ours. Our battle drill limits itself pretty much to the *mechanics* of combat action. To this extent perhaps it may be considered an elaboration of the ordinary extended order drill.

Capable combat officers argue against a "fixed" solution in combat, on the grounds that the fixed solution instills rigidity in thinking. This is a perfectly valid point which we feel we do not violate. Our manual states: "Battle drill does not pretend to solve



BRIGADIER GENERAL HAMILTON H. HOWZE, a frequent contributor to *ARMOR*, served with the First Armored Division throughout World War II. Subsequent to the War he held important assignments at the Ground General School, Fort Riley, Kansas, and in the office of the Assistant Chief of Staff, G2, Department of the Army prior to his present assignment as the Assistant Division Commander of the Second Armored Division, Europe.

There begins in this issue of ARMOR a series of articles on the training of an armored division. These articles are compiled on the basis of the experience on the part of the author in his present post as Assistant Division Commander of the Second Armored Division in Germany. As such, General Howze is charged with the training of the tank, infantry, reconnaissance and engineer elements of the division, and the functioning of those elements in conjunction with the supporting fires of the division artillery.

all battle problems. Moreover, when a battle drill formation has been ordered and taken, it may and frequently should be somewhat modified to meet the special situation obtaining. But even if modified later, by battle drill the Commander's decision has been quickly converted into action—a major chore has been accomplished. Very often such rapid and forceful action will in itself surprise an enemy and throw him off balance."

Battle drill thus provides the small unit commander certain tools built to do certain tasks, much as an automobile mechanic is provided wrenches, pliers and screwdrivers. The act of giving the mechanic these tools does not imply that he must proceed in a set manner to fix a defective vehicle: he must first analyze the difficulty, and having done so use the tools to the greatest advantage, proceeding not by rote but through the application of reason—guided by observation, and facilitated by practice. So with the platoon leader.

Training in Battle Drill

The drills prescribed and the flag signals therefor are simple and easy to learn. Preliminary to training in mounted drills we require unit C.O.s to instruct their commands through the use of models: matchboxes with numbers pasted on them do admirably as tanks or carriers. We teach that it

is not necessary to indulge in long-winded lectures on these drills—the quickest and easiest way to learn is to do the drills themselves after the briefest sort of explanation.

We teach that all training in these drills should be conducted at a fairly fast tempo. By a great deal of action—changes in formation and changes of pace—interest is sustained and much may be accomplished in a short period of time. Training must be lively, and good fun—but never sloppy or haphazard.

Flag Signals

The extended order drills utilize flag signals very extensively. The use of flag signals cuts radio traffic materially, a great advantage in an armored organization, and permits the platoon to operate in case of enforced radio silence—enforced either by the desire by the higher command for secrecy or by reason of radio failure.

The flag signals prescribed are simple and conform in most cases to the standard arm and hand signals. They utilize the set of flags issued with each armored vehicle.

Formation signals are given by the use of the green and the orange flag in combination. It does not matter what flag is carried in which hand.

The green flag alone is used to indicate simultaneous individual movement by all elements of the unit. The

orange flag alone is used to indicate individual movements by selected elements: the platoon leader first points the orange flag at the selected element, and then gives, still with the orange flag, the proper signal. This works excellently, with confusion resulting very rarely. The red flag alone is used to indicate that the unit is in a danger area (under enemy observation), and also used to indicate "commence firing," and direction of fire.

"Dangerous Direction"

During the last war, there were many instances in which our tanks were surprised (and sustained varying amounts of damage) because each of the tanks had its attention focused entirely to the front, often merely on the tail of the tank immediately ahead. Some device is necessary to permit the company or platoon leader, by command, to make his unit particularly alert to the possibility of hostile fire or hostile attack from a given direction. We use the term "dangerous direction," which is a little cumbersome, but does suffice.

As an example, assume that a tank platoon is in a right echelon formation covering the right flank of its company which is engaged in a deployed approach march through hostile territory. Obviously, it would be unwise for all guns of this platoon to be directed straight to the front. The

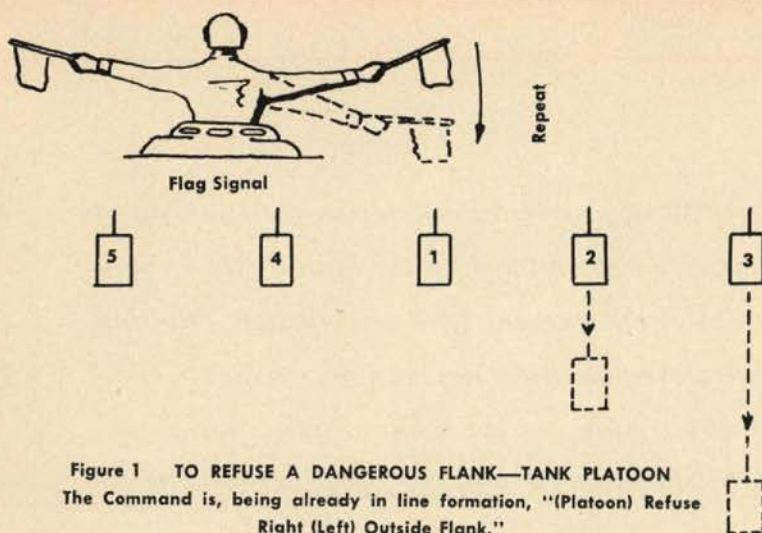


Figure 1 TO REFUSE A DANGEROUS FLANK—TANK PLATOON
The Command is, being already in line formation, "(Platoon) Refuse Right (Left) Outside Flank."

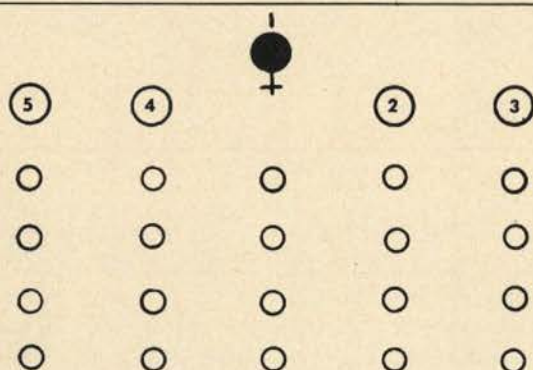


Figure 2 DISMOUNTED ASSEMBLY—TANK PLATOON
The Command is, "(Platoon) Dismount, Form On Me."



Figure 3 ORDERS GROUP—TANK PLATOON
The Command is, "Orders Group On Me."

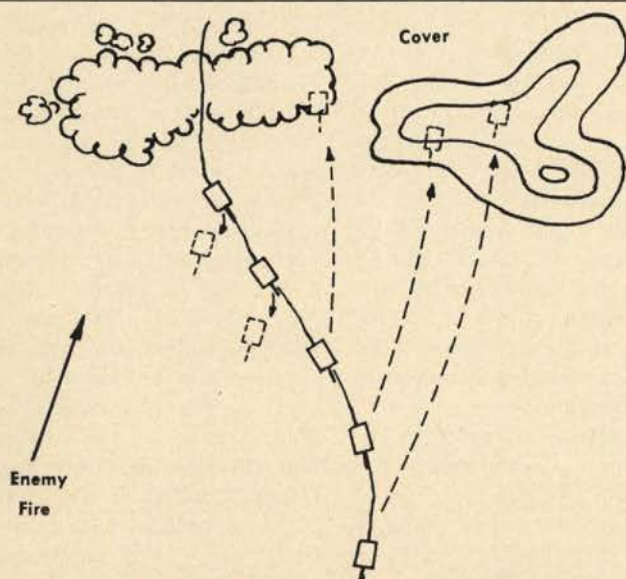


Figure 4 BLOCK & WITHDRAW—TANK PLATOON

platoon leader would therefore command, "Dangerous Direction, Right Front." The several tank commanders would thereupon direct special attention to the right front, and, terrain permitting, would keep their main armament pointed generally in that direction—especially when the tanks were motionless.

Battle Drill for Tanks

The extended order drill that we prescribe is a simple drill very easily learned. We require that platoons use proper combat distances and intervals between vehicles, and that they do not form a perfect line or column. Some stagger is desirable. We also prescribe that movements be executed with speed, consistent with proper driving procedure; that action be rapid, and formations frequently changed; that practice be had in both systems of control, radio and flag signal. When using radio we require that radio traffic be kept to an absolute minimum, demanding the use of *commands*, which are easily understood, instead of wordy directions which are to the contrary.

The order of tanks within formations can, where desirable, be varied by order of the platoon leader. This does not mean that execution may be sloppy; it is only desirable that platoon leaders and tank commanders recognize that extended order drill is not inflexible, and common sense will frequently dictate modifications in ordered formations.

The commands for the several drills usually begin with (PLATOON) or (COMPANY). For the words in parentheses, we substitute call sign designations (abbreviated according to usual practice) as specified by the Signal Operating Instructions (SOI).

When individuals or the entire platoon are dismounted, movements to prescribed formations are normally at the double time.

Extended order drill for the tank platoon includes the formations Line, Column, Echelon, Wedge, Inverted Wedge, and Line of Section Columns. A simple signal will also serve to refuse a dangerous flank. See Fig. 1.

A definite formation is prescribed for the dismounted assembly of the tank platoon. See Fig. 2. This is felt to be very useful, so all instruction of dismounted units in the 2d Armored Division is with crews or

squads formed together. It is also far easier to issue orders to a group so formed.

Battle drill prescribes a standard Orders Group. See Fig. 3. It is simple to command, "Orders Group on me," which will bring the group together in a standard order or formation; how much more awkward it is to say, "I want to see the tank commanders, the FO, the CO of attached infantry platoon, and the squad leader of attached engineer squad, in the vicinity of my tank." For one thing, it is easy to forget one or more of these individuals, if one must name them each time.

The extended order part of battle drill also requires individual tank movements (green flag if all tanks are to execute simultaneously; orange flag, pointed, to move selected tanks) as follows: Tanks right (left) about, right (left) flank, tanks right (left) oblique, forward, and back.

Tactical Drills for the Tank Platoon

In addition to the previously described extended order exercises battle drill requires the tank platoon to practice the approach march, action as a covering force, the hasty attack, hasty defense, delay, movement through woods, air defense, movements through defiles, and what we call "laeger"—a formation for all-round defense, useful to a platoon which must spend the night in hostile territory isolated from other elements.

Most of these amount merely to the execution of extended order drill with a specific tactical situation in mind. The radio may be used by the platoon leader to explain that tactical situation, very simply, to his Orders Group. He may say, for example, "Assume that the platoon is heavily engaged by enemy tanks located in forward edge of those woods, and we have been ordered to withdraw from this ridge. We will practice delaying action." He would then give necessary extended order drill commands.

In illustration of these drills, two paragraphs from the manual are quoted: "HASTY ATTACK. The platoon leader, moving from any extended order formation, launches a tank attack in a direction of his choosing, normally towards an objective likely to harbor hostile elements. A hasty attack order should be approximately this: PLATOON ATTACK,

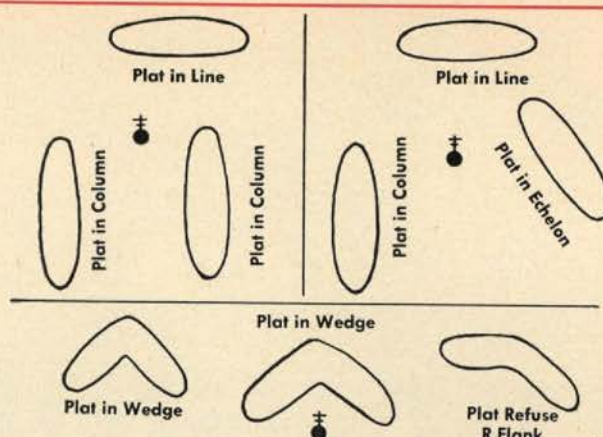


Figure 5—ADDITIONAL TANK COMPANY FORMATIONS

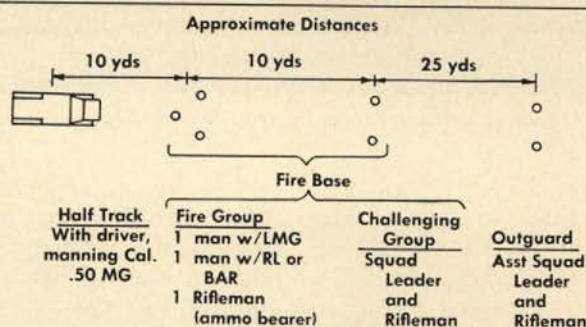


Figure 6—THE OUTPOST—INFANTRY SQUAD

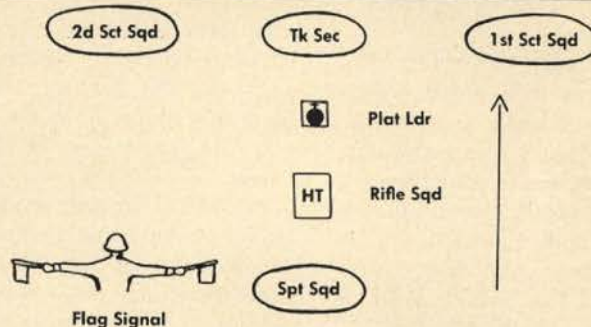


Figure 7—TEE FORMATION—RECONNAISSANCE PLATOON
The Command is, "(Platoon) Form Tee." This formation provides flexibility to meet a suddenly appearing enemy. From this formation the platoon may attack, defend, or block and withdraw.

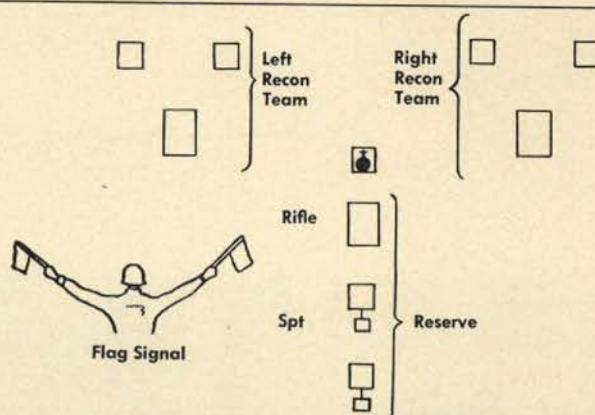


Figure 8—Y FORMATION, RECONNAISSANCE PLATOON
The Command is, "(Platoon) Form Y." This is a good formation when acting as a covering force, or in reconnaissance of two parallel routes. Occasionally (as when platoon is operating as covering force for larger unit) the two Recon Teams may move by alternate or successive bounds. When reconnoitering a single route it is desirable to retain the "Y" designation, since the reconnaissance should not be confined strictly to the road.



A platoon of Armored Infantry coming into line during battle drill practice.

2D SECTION COVER. OBJECTIVE, THOSE WOODS.' The platoon should react promptly, the section assigned overwatching fire taking suitable position and bringing its guns to bear, the rest of the platoon moving very aggressively towards the objective."

"BLOCK AND WITHDRAW. The tank platoon needs a drill which will permit the platoon to withdraw in good order when it is placed under sudden anti-tank fire coming from a point which cannot be overrun immediately by the tank platoon itself. A suitable command under this circumstance is, 'BLOCK AND WITHDRAW: SECOND SECTION COVER, FIRST SECTION BACK.'

On this command (see Fig. 4) the second section, moving the minimum necessary distance to get into a firing position, places 90mm and machine gun fire, in heavy volume from the stationary tanks, on the enemy. The first section commences backing its tanks towards cover under the overwatching fire of the second section. When the first section reaches a suitable firing position in cover it will cover the withdrawal of the second section.

"NOTE: This drill should not encourage a defensive attitude on the part of tank platoons. On the other hand, sometimes there is no alternative but to take cover when the enemy places you in a position in which

you cannot overrun and destroy him. An emergency drill to meet this situation must be frequently practiced."

Tank Company Battle Drill

Extended order drill for the company follows the same principles as for the tank platoon. The formation of each platoon within the company formation is *not* prescribed by the manual; it may be ordered by the CO, or in the absence of such an order by the platoon commander, to fit the terrain and the tactical situation.

Company formations are prescribed for column, line, wedge and inverted wedge.

Additional formations, with no title assigned them, are indicated in Figure 5. To take these formations (and others which may be determined useful at the moment) the company commander merely gives orders (no prior conference necessary) to the several platoons which will move them to relative positions shown. These formations, and variations thereof, as well as passage of platoons past one another and even through one another, should be continuously practiced. It is not necessary that all platoons always be moving simultaneously; we practice movement of platoons by bounds, and successive steps forward (and to the rear).

Battle drill for the tank company includes drills for the approach march, covering force, hasty attack, hasty defense, delay, passage through defile and laeger.

A sample of the company drill is the hasty defense. Somewhat similar to the hasty attack, a typical order would be: "HASTY DEFENSE; FIRST AND SECOND PLATOONS DEFEND IN PLACE, THIRD PLATOON ASSEMBLE IN COVER BEHIND FIRST PLATOON." Platoons in this drill should adjust their positions sufficiently to provide best possible firing positions in their vicinities, and to present their frontal armor, if possible, to the enemy.

Battle Drill For Armored Infantry

Similar to that prescribed for the tank platoon and tank company are the battle drills for the armored infantry platoon and company, mounted and dismounted. The same principles apply. Additionally the armored infantry squad has a prescribed battle



Battle drill teaches how to do quickly what must be done often in combat.

drill for dismounting from the carrier, prepared for action front, right, left or rear.

An informal but very important extended order drill, dismounted, is prescribed for the armored infantry platoon. The formations prescribed in FM 7-17 are used except that we do not require the use of a platoon Vee, the platoon wedge and the platoon echelon, inasmuch as we adhere to the principle that squad formations within the platoon formation may be varied on the platoon leader's or the squad leader's command as against the fixed squad formations prescribed by the manual.

From the simple Column or Line formation the platoon leader should work his platoon through a wide variety of formations, dependent, if he chooses, on an assumed tactical situation and on the terrain. With the aid of a whistle (unfortunately not an item of issue) to call attention, he changes platoon formations by giving hand signal (not flag signal) commands to each of his several squads, increasing and decreasing their speed of movement, changing their formations, and changing their direction of movement. He includes "side-slipping"—moving a unit by the flank, useful to avoid going over exposed terrain, and for passage through a corridor, etc. He also includes commands to open fire and to cease fire, and range signals.

When halted, men drop to one knee. They may be placed in a prone firing position by further command or signal.

The platoon is moved, in comparatively rapid succession, through formations presenting wide and then narrow fronts; formations "refusing" the right or left flank, road march, approach march, and firing formations. The platoon practices changing direction, and moving to the rear as well as to the front, and moving over varied terrain. Subordinate commanders must be cautioned to use horse sense in the execution of these drills, so that they do not permit their units to take off cross country, out of control, merely for the lack of a restraining signal by the platoon leader. Visual contact should be maintained wherever possible.

Care should be taken NOT to require too much double time—for when the rear elements must catch up,



A tank section moves in envelopment, guns pointed in "Dangerous Direction."

the leading elements may be halted.

The Orders Group may be called together periodically to discuss errors and future exercises. This should not be done too often—one of the prime results to be gained by extended order drill and battle drill is the development of the ability to execute the several movements and actions through the use of commands, given at a distance either by radio or signal.

The dismounted drill, if carried on with many variations in formation and action, works up interest and enthusiasm among platoon members. We make the drill a good workout, with a liberal use of imagination (we hope) on the part of the leader. He should require promptness and vigor

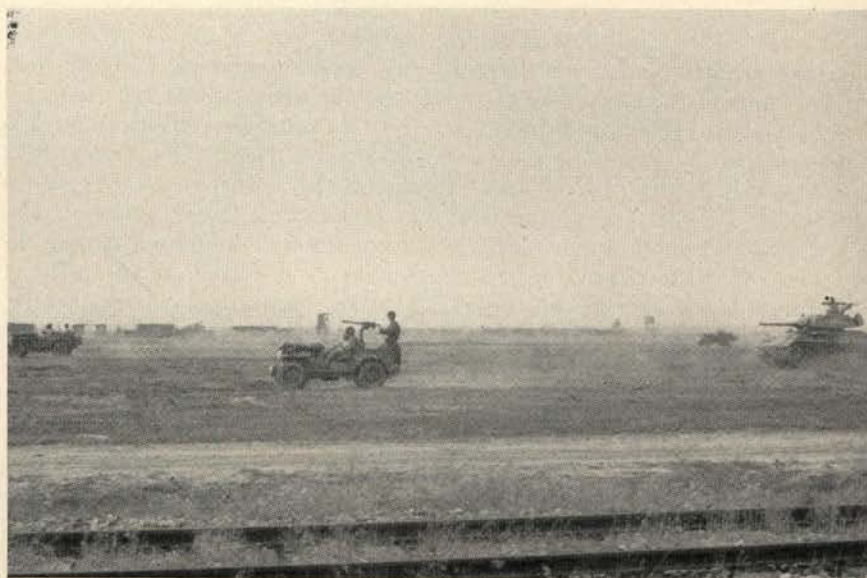
in execution, and provide periodic rest periods.

The Outpost

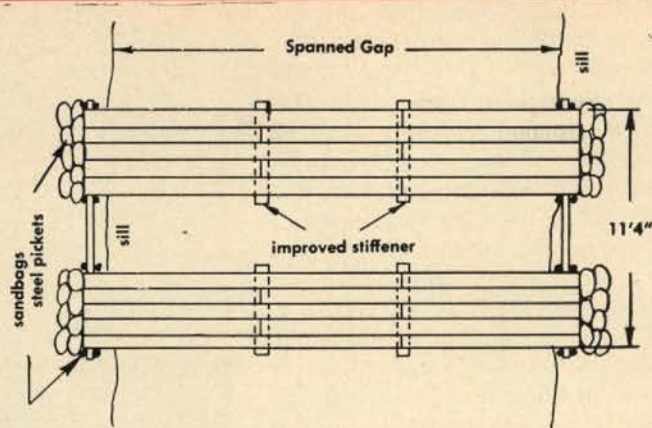
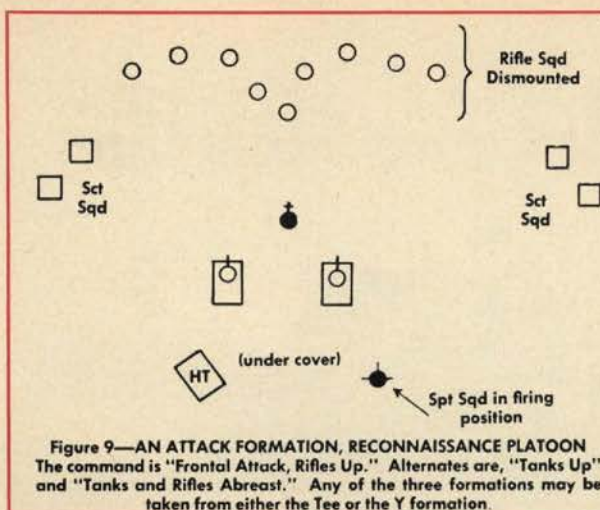
We have found it desirable to prescribe a squad battle drill for the outpost. Since the armored infantry squad frequently operates at a strength of less than 10 men the drill is built around a strength of 8; the presence of the ninth and tenth man will permit strengthening elements as the squad leader desires.

Being mounted or dismounted, the command is "SQUAD, FORM FOR OUTPOST." At this command, the squad takes the formation indicated in Figure 6.

The squad leader may then take



The left reconnaissance team of a platoon moving in the "Y" formation.



this formation to the selected locality for the outpost, and emplace the various elements of it. It should be noted that when the outpost is emplaced tactically, different distances apply: from Outguard to Challenging Group perhaps 5075 yards, from Challenging Group to Fire Group about 25 yards. In practicing battle drill, actual emplacement tactically need not *always* be done, but it should frequently be done.

This drill will permit a platoon leader to outpost up to four routes of approach simultaneously. As soon as possible after ordering them established the platoon leader should inspect each outpost, making such corrections as he sees fit.

It is to be noted that this is an outpost, as against a mere outguard or listening post; it has the function of stopping or delaying an enemy force with such effectiveness as to permit the unit being protected adequate time to alert itself and defend itself. The bazooka will normally be ordered if the outpost is susceptible to armored attack. The carrier may be made part of the Fire Group, or left under cover, at the platoon leader's discretion. In order to provide rest for a squad on such outpost duty, it is necessary to relieve the entire squad by another squad.

Tactical Drills

The tactical battle drills for the infantry platoon cover the same situations as those for the tank platoon, with a few additions. So with the company battle drills—they follow the principles which apply to the tank company. Again the formations for the platoons within the company are

not prescribed by the manual, being left to the judgment of the company commander if he desires to exercise it, or, more frequently, to the platoon leaders.

Battle Drill for the Reconnaissance Platoon

And so do the battle drills for the reconnaissance platoon follow the principles which apply to tank and infantry platoons. Reconnaissance battle drill is slightly more intricate because of the organization of the platoon, which gives to the platoon leader all the elements of a small army: light reconnaissance elements, tanks, riflemen, and an indirect fire element.

A typical formation, extracted from the manual, is shown in Figure 7, and another one in Figure 8. These are extended order drill formations, frequently practiced.

Tactical drills prescribed for reconnaissance are these: action as covering force, hasty attack, hasty defense, delay, air defense, the securing of a road junction, movement through a defile, and laager. In Figure 9 is shown one formation of the platoon in executing a frontal attack. (The word "frontal" should not dismay the reader; ultimately, from the point of view of the platoon, every attack becomes "frontal" even though it is delivered on the flank or rear of the enemy.)

Engineer Battle Drills

Engineer units are required to maintain proficiency in the execution of the following battle drills: installation of a hasty mine block on a road; breaching a mine road block; construc-

tion of a hasty abatis; construction of a pioneer road to permit passage of combat vehicles through thick woods and again (the drill being quite different) through thin woods; the construction of a tank crossing over marshy ground by use of log mats; maintenance of a tank crossing under heavy use by tanks and carriers; construction of an M-4 balk treadway bridge (22 foot span and 28 foot span); and M-2 raft assembly (in connection with the construction of a tank ferry or a floating bridge).

These exercises have markedly increased the overall efficiency of our engineer battalion.

Experience in the drills has led to several improvisations of great value to the armored engineers. One of these is special grappling tongs to remove abatis, another is the pre-constructed log mat, and a third is the M-4 balk treadway bridge. The latter utilizes the regular engineer aluminum bridge balks which, provided with suitable stiffeners, can be combined to form an improvised tank bridge over small gaps. This is an interim measure, the best available to us, but not satisfactory because the bridge must be placed by exposed personnel working for perhaps 20 to 30 minutes in the open. Figure 10 shows a 22 foot bridge in position.

Battle Drill for the Combined Arms

We believe that it is undesirable to prescribe formations and actions in too specific teams, because great variations in composition of a combined arms force are to be expected. The combined arms battle drill is designed generally to meet the needs of the reinforced company (tank company

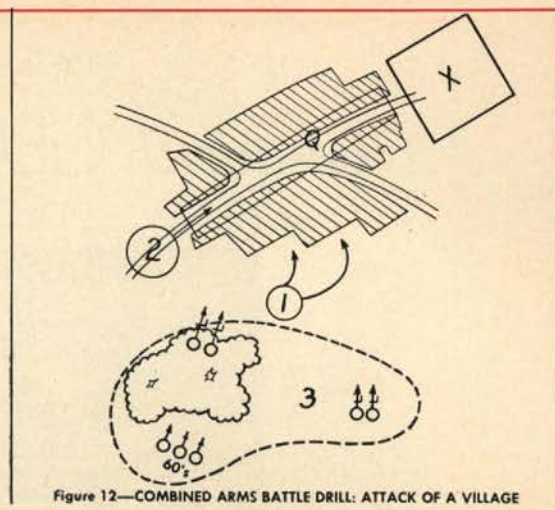
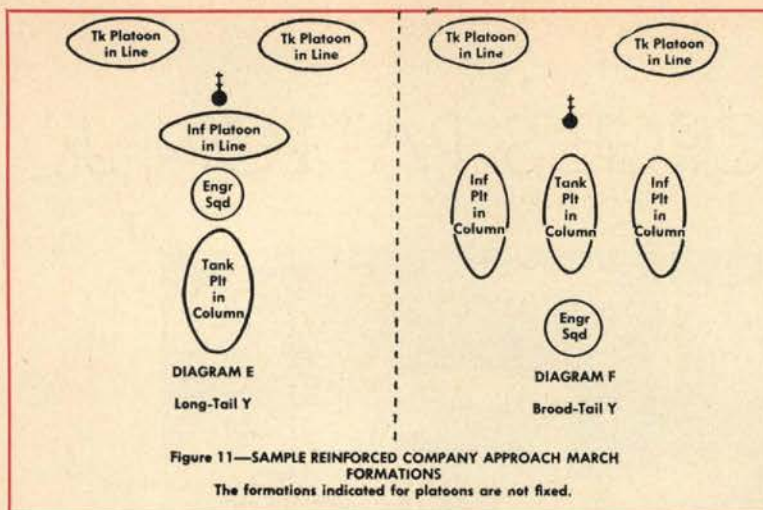


Figure 12—COMBINED ARMS BATTLE DRILL: ATTACK OF A VILLAGE

reinforced by one or more platoons of infantry, or infantry company reinforced by one or more platoons of tanks). No flag signals are prescribed for the force as a whole, but flag signals may be used by subordinate elements as prescribed for them.

Generally speaking, a mortar platoon is not shown in the combined arms battle drill formations. It may either be placed appropriately in the formations, or put in firing position supporting the formation.

Formations

Formations are prescribed for the attack forward (infantry mounted, infantry dismounted; tanks leading, infantry leading, or tanks and infantry moving abreast), and for the envelopment. Figure 11 illustrates two such formations.

Tactical Drills for the Combined Arms

Drills are prescribed for the approach march, action as a covering force, hasty attack, hasty defense, delay, village fighting, and crossing an obstacle.

For village fighting, a reinforced infantry company may be formed in teams as follows: (1) a purely infantry element (two platoons) capable of working through, over or under houses; (2) a tank and infantry element (one platoon of each) capable of working through the principal streets and adjacent enemy held houses; and (3) a fire support element (the mortar platoon with one or more of the rifle platoon machine gun squads attached to it).

Practice must be had in employing

these elements in different villages. The *initial* commitment of these elements in a village may be as shown in Figure 12. (Not mentioned further is the obvious desirability of getting artillery and tank overwatching fire support from elements not under command.)

It is particularly desirable to designate, for all to thoroughly understand, Area Q (for example) as a "killing ground"—that is, every living person appearing in that area *ahead of Team 2* (in the street, or in the doors or windows) will be immediately killed by Team 2. Team 1 drives the enemy into the killing ground—but does not enter it itself—as Team 2 works down the street. The area beyond the village (Area X) is often designated a killing ground in addition to or as substitute for Area Q.

Conclusions

It would be vanity indeed to claim that the 2d Armored Division is thoroughly proficient in all the battle drills. Nevertheless we have attained a reasonable standard of proficiency, and this has materially assisted us in our constant effort to achieve and

maintain combat readiness. The battle drill manual, carried by commanders during training, is of considerable use as a reference document.

The use of battle drill has brought about a very desirable uniformity in training methods throughout the division. It is a very comforting thing for a commander to recognize that briefly given commands will bring about intelligent reaction and quick obedience by any other element of the armored division put under his command. The use of battle drill has minimized the time of reaction, by our small units, to any given tactical situation.

It is reiterated that the use of battle drill has not made us more rigid or stereotyped in our combat exercises—but it has brought about coordination and speed in the application of the power which is inherent to armor. The extended order drills are useful always as a means of control; the tactical drills get something done, in a hurry, when the lack of speed in itself will seriously compromise the chance of success. Each one of our junior officers is taught to disregard the battle drill approach to any tactical problem if his judgment indicates.

Published in our Training Notes is this quotation, "Mobility means quick decisions, quick movements, surprise attacks with concentrated force; to do always what the enemy does not expect, and to constantly change both the means and the methods—to do the most improbable thing whenever the situation permits; it means to be free of all set rules and preconceived ideas." We buy that, and we buy the Battle Drill, too.

Should an Armored unit desire a copy of the 2d Armored Division Battle Drill, single copies of the chapters applicable to the particular unit may be obtained by writing The Adjutant General, 2d Armored Division, APO 42, c/o Postmaster, N. Y., N. Y.

General GEORGE S. PATTON, Jr.



Commemorative Stamp Ceremony

Each year on the eleventh of November, all Americans pay tribute to those who made the supreme sacrifice upon the field of battle in the defense of our great nation and the American way of life.

In addition to performing this time honored custom, November 11, 1953 had a special significance to all military personnel the world over. For on this date the first commemorative stamps honoring the late General George S. Patton, Jr. and the Armored Forces of the United States Army were issued at Fort Knox, Kentucky, the "Home of Armor."

The Armored Center, commanded by Major General John H. Collier, who acted as the official host for this gala occasion, was honored to have been the first military installation ever designated for the first-day issue of a stamp.

Second-day issues were made throughout the country, but of special interest was the fact that an Army Postal Office was given the signal honor of making the initial issue in Europe. APO 42, the postal unit of the Second Armored Division, stationed in Europe, commenced their sales on the eighteenth of November. This was also a first in that an APO had never been so honored before.

Many military and governmental dignitaries attended the ceremonies at Fort Knox. The Honorable Albert J. Robertson, Assistant Postmaster General, Bureau of Finance, represented the Post Office De-

partment at the first-day sale ceremony of the General Patton Memorial stamp.

Major General Collier, as official host for the day, opened the festivities with an address of welcome to all who attended.

General Jacob L. Devers, former chief of the Armored Forces at Fort Knox and who commanded the Army Field Forces at the time of his retirement, was the principal speaker. Extracts of his remarks are quoted:

"Today another richly deserved honor is added to the many that have been bestowed by a grateful nation and its grateful allies upon one of our most illustrious generals, George Smith Patton, Jr., whose death in 1945 brought to an untimely close a magnificent military career of over 40 years. His masterful leadership of men, his tactical brilliance, his high courage, and splendid martial spirit raised him to the stature of an almost legendary warrior hero.

"The issuance of a stamp commemorating General Patton and paying tribute to American armor, which became his mighty instrument of victory, symbolizes American respect and boundless admiration for a great soldier whose habit was success, a great soldier whose exploits fired the imagination and enthusiasm of patriots, and one who wore the stars of command with a distinction few in history have matched. . . .

"It is particularly appropriate that the Patton stamp should be issued first on Armistice Day, not only because Armistice Day coincides with the anniversary of General Patton's birth, but also because it is a victory day—and Patton was a man of victory. . . .

"On November 11, 1918, came the dawn of a great hope for just and lasting peace on earth—a hope that was all too soon dispelled by the clouds of another and far greater war. Unlike most Americans, Patton, with clear foresight, anticipated World War II. Furthermore, he anticipated the kind of warfare—the swift, hard-hitting enemy armor—that we would face, and he diligently worked toward building a strong armored force for America. Subsequently he proved, through its strategic use, that armor was an essential factor in the attainment of victory. . . .

"In this era of deadly peril we can have no better precepts to guide us than those which General Patton so often enunciated and to which he adhered throughout his career.

"*In yourself demand the impossible.* In no respect was Patton ever a defeatist. Confidence was one of the most powerful weapons in his arsenal, as it should be in ours today. He deliberately chose the most impossible terrain to fight across. He deliberately chose the most impossible course to follow. The so-called impossible was a challenge he could not resist, and accepting it, he proved by victory, time and time again, that—to the determined man—the impossible does not exist.

"*Always risk.* Nothing worth while can be achieved without risking something. If we believe in ourselves, as we should, we ought never to hesitate in moving toward our goal. If we cringe from facing the issue until every possibility of failure is

eliminated and absolute success is assured, we will walk through the valley of hesitation to defeat.

"Linked with this is a third precept: *Never listen to the advice of fear.* Fear is the deadliest of our enemies, the most potent ally of the power that threatens us. Fear is the negation of the confidence that ought to imbue us. We are the most powerful nation on earth, and we ought never to forget that we cannot be defeated *unless we defeat ourselves* by giving way to fear, by dropping our guard, by allowing our determination to decay. . . .

"And so today we honor George Smith Patton—who never evaded any issue—who moved straight to the heart of every situation—who took no counsel of fear or advice of cowardly caution—who sought always to do what best advanced the cause for which he fought, no matter how tough the job.

"We can have no better guide as we face the uncertain future."

General Devers also noted the recent death of Mrs. Beatrice Ayer Patton, the late widow of General Patton.

Lieutenant General Floyd L. Parks, Commanding General of Second Army, presented the eulogy in General Patton's memory.

The presentation of special stamp albums was made by the Assistant Postmaster General. These albums were accepted by Mrs. George S. Patton III.

The invocation and benediction were given by Chaplain (Colonel) H. F. Donovan.

A review of 12,000 troops and more than 100 tanks followed the assembly. This review, composed of troops from the Third Armored Division and School Troops, The Armored School, jointly honored the dedicatory ceremonies and the observance of Armistice Day—a day of special significance to all members of the Armed Forces.



General Jacob L. Devers making the special address commemorating Armistice Day and the Patton Stamp.



L. to R.—Lt. Gen. F. L. Parks, Gen. J. L. Devers, Mrs. G. S. Patton, III, and Maj. Gen. J. H. Collier.

ARMORED

COMMAND CONTROL



by LT. COL. EDWARD G. EDWARDS

MUCH has been written regarding the limitations placed upon the use of armor in Korea.

Armor's principal "stock in trade," gunnery, maintenance and communications, formed the keystone upon which Korean armor warfare of the last two years has been built. Mobility, firepower and its resultant shock action could not be exploited to a degree worthy of mention. This was true because of the very nature of the war, with its stabilized front, where trench and bunker warfare were the order of the day.

Mobility and flexibility were neither lost nor forgotten. However, they were limited in the main to movement from and to the main battle positions where tanks were placed in fixed firing positions. This routine was broken occasionally by forays forward of the OPLR and special tank firing missions from the OPLR and the main battle positions.

One such tank firing mission, ac-

complished by the 73d Tank Battalion not long before the cease fire, proved that the flexibility of armor, when coupled with good gunnery, maintenance and communications, can be exploited to accomplish a mission no other weapon can accomplish as efficiently or effectively.

The enemy over a considerable period of time had constructed positions in front of the 1st ROK Division and was "inching forward." These enemy positions were so located as to threaten the friendly OPLR and greatly curtail friendly patrol activities.

The Corps Commander arranged with the 7th U. S. Infantry Division Commander to have the 73d Tank Battalion conduct a tank shoot to destroy the enemy positions to the front of the 1st ROK Division.

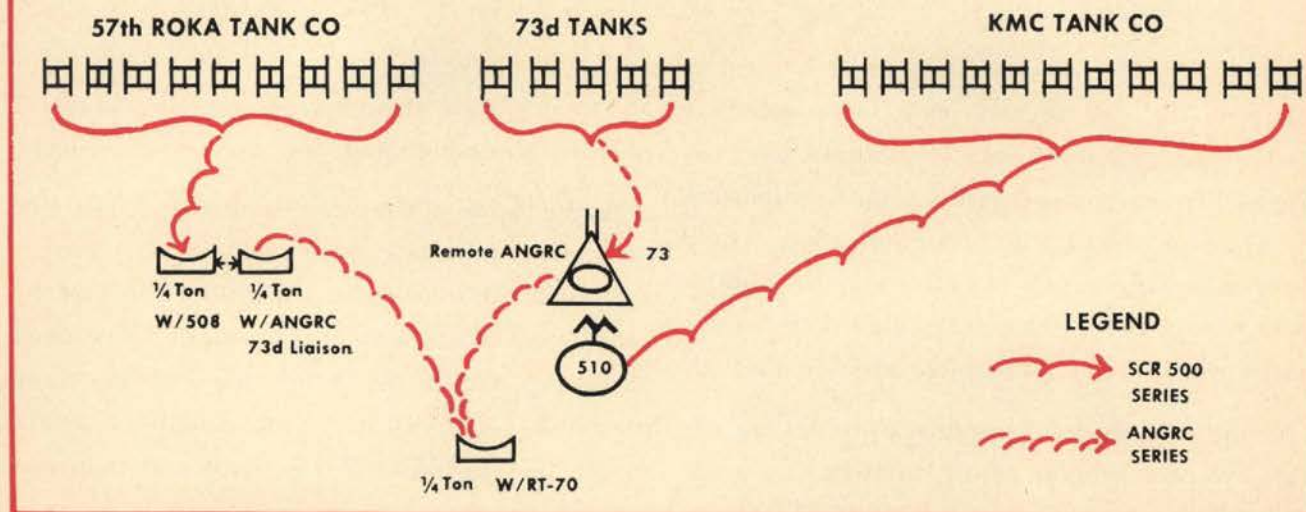
Plans were made to accomplish the mission and were coordinated with the Commanding General and regimental commanders of the 1st ROK Division. The plan included the coordination and control of the fires of the 57th ROK Tank Company on the main battle position in the Division left sector and the Korean Marine Corps Tank Company on the main battle position in the right sector. It was planned that eight tanks

of the 73d Tank Battalion would move into firing positions which were to be prepared on the outposts in the center sector to destroy specific targets at ranges of from 300 to 1500 yards. Map and ground reconnaissance was accomplished by all concerned and zones of fire for each element, to cover all designated targets for the operation, were established. The ROK Regimental Commander agreed to have the tank positions prepared as requested. It later developed that only six of the eight tank positions could be constructed. Enemy direct and indirect fire prevented the work parties from completing two of the positions.

The greatest problem to be solved was the matter of communications and control. There was no common radio being used by the three separate tank units taking part in the operation. The 73d Tank Battalion was equipped, just prior to the operation, with the ANGRC series radios. The ROK tank units were equipped with the 508 series radios. To solve this communications problem a liaison officer of the 73d Tank Battalion in a jeep with an ANGRC 7 radio was assigned to the 57th ROK Tank Company in the left sector to provide contact between the command of that

LIEUTENANT COLONEL EDWARD G. EDWARDS served in Europe during World War II. He recently returned from Korea where he was assigned as Commanding Officer of the 73d Tank Battalion. He presently is on duty with the O & T section, G-3 Department of the Army.

SCHEMATIC COMMUNICATION NET



unit and the 73d Tank Battalion forward command post in an OP in the center sector. Both the KMAG advisor and the commanding officer of the Korean Marine Corps Tank Company were located at the 73d Tank Battalion OP with an SCR 510 radio for communication with their unit. Command communication was to be established by the use of the remote control component of the ANGRC series jeep-mounted radio which was to be wired to the Command OP.

At 0625 hours on the day of the operation eight M46 tanks (two were taken as spares), one M32 tank retriever, and one M39 Armored Personnel Carrier of A Company, 73d Tank Battalion moved out of the company area, closing into the forward attack position at 0745 hours. At 0920 hours, six tanks moved out of the forward attack position and up the steep slopes into their assigned firing positions. While moving into firing position one tank had its track jammed when it became entangled in a mass of barbed wire which wound around the drive sprocket. This tank could not negotiate the last few yards on the hillside into its firing position and did not participate in the action. Another tank while moving into its position threw a track while maneuvering on the steep slope approximately fifteen yards from its position. The tank commander used four rounds of 90mm HE to blow out the front of the prepared position so as to obtain a field of fire. This tank successfully

participated in the action without the protective advantages of the previously prepared hull defilade position.

At 1000 hours all tanks opened fire across the entire division front on order of the 73d Tank Battalion Commander. Fire continued at a rapid rate until 1130 hours when the order to cease fire was given. At this time the four M46 tanks which experienced no trouble getting into position, moved back out of their firing positions into complete defilade. The M32 retriever was dispatched from the forward attack position to the out-post area. The tank with the thrown track was promptly repaired. Five tanks withdrew to the forward attack position under their own power. The retriever recovered the tank with the jammed track under heavy incoming direct and indirect enemy fire. All vehicles returned to the company area before the end of the day.

During the one and one-half hours of firing no problems were encountered in the shifting of the fires of designated tanks to targets of opportunity picked up from the OP or in directing the increase or decrease of the rate of fire by radio.

The statistics for the operation were as follows:

Tanks Participating: 25 (5—M46, 9—M36, 11—M4A3).

Tank Ammunition Expended: both 76mm and 90mm—1,228 rounds.

Damage inflicted upon the enemy: 22 Bunkers destroyed, 26 Bunkers damaged, 6 Machine gun positions

destroyed, 2 OP's destroyed, 1 OP damaged, 7 Direct fire weapons destroyed, 5 Direct fire weapons positions destroyed, 7 Caves sealed, 202 Yards of communication trench damaged, 5 Secondary explosions, 1 Enemy counted KIA, 92 Enemy estimated KIA, 155 Enemy estimated WIA.

Enemy fire received: 32 rounds of 57mm Recoilless Rifle fire, 43 rounds of 60mm mortar, 8 rounds of 76mm artillery, 102 rounds of 82mm mortar, 5 rounds of 122mm artillery.

Damage inflicted by enemy fire: 2 Tanks slightly damaged by direct fire, 4 Tanks slightly damaged by shell fragments, *No personnel casualties.*

From this operation the following lessons were learned:

Separate armor organizations each equipped with different type tanks, M46, M4A3, and M36, can be organized under a single command to perform a coordinated mission.

The fact that all tank elements in such an operation are not equipped with the same series of radios can be easily overcome by the use of liaison personnel with the jeep-mounted ANGRC radios stationed near the NCS of units in the operation.

The remote control component of the new family of radios affords good communication from an OP which can be at a great distance from the command radio.

Communications can be established in a minimum of time for the control of armor action over a wide front.

Broadening our Base

During the past several years, many members of the United States Armor Association have expressed their opinions regarding the requirements for active membership in this organization. These views have varied from (1) allowing the requirements to stand in status quo, as spelled out in the constitution, to (2) a complete revision thereof.

As the constitution presently provides, an officer, except a general officer, must be "assigned to, detailed in or serving with Armor" in order to be eligible for active membership. This has imposed restrictions on many other officers who are thoroughly interested in the art of mobile warfare.

This means that an officer who is presently serving with an Armor unit, but who may be assigned basically to another branch of the service, is eligible for active membership. However, upon his transfer to another assignment, other than an Armor unit, he becomes an associate member. This applies to regular or civilian component officers.

Further, many officers of the Marine Corps are vitally interested in armored warfare—our files contain hundreds of Marine Corps subscribers. Their interest is genuine in that they are assigned to or closely working with Marine Corps armor units. In Korea, many of them worked with Army armored units; hence, they have an appreciation for the capabilities, limitations, and potentialities of self-propelled units.

During World War II, the close association of Tactical Air personnel with front-line Armor units created an inseparable tie which proved most vital to the successful completion of a ground mission

at Division level or higher. Today, this tie is still evident in our planning, training and maneuvers.

Appreciation of the other combat arms by armor personnel, and *vice versa* we believe, has brought a mutual admiration for the role performed by each branch in the accomplishment of its assigned mission as part of the team. It is felt that those persons so interested in the art of mobile warfare should be entitled to active participation in our Association.

In respect to our own branch personnel, we feel that every Armor officer should be an active member of his branch Association. Whether or not ARMOR magazine is readily available through unit subscription or by other means, the Armor officer should be an active member and contribute his strength and assistance to the organization in furtherance of its aims and purposes, while, at the same time, receiving the benefits of a professional Association in return, as well as a personal copy of the magazine for future ready reference.

Armor is an integrated arm. It is composed of personnel, as depicted in the Armor patch, from all the ground arms. In addition, it is dependent upon all the technical services for support in order to maintain its characteristic role of mobility.

To limit our voting membership to those presently engaged in Armor, not only limits our potential readership but denies privileges to many who otherwise might take an active part in the formulation of our policies. Our editorial policy constantly strives to obtain articles from outside our branch so as to keep all our members abreast

of the entire military field rather than to be confined solely to the field of Armor.

Perusing our current issue of ARMOR, you will see articles written by officers assigned to the Ordnance Corps, The Adjutant General's Corps and the Infantry. Glancing at back issues through the years, you will see practically every subject pertinent to the military profession covered in some phase or other.

Our diligent council has discussed the *pros* and *cons* of this subject over the course of many meetings, and now feels that the time is appropriate to expand our membership. This proposed expansion is intended to admit present or former officers and warrant officers of the Navy, Air Force, Marine Corps, and Army, as active voting members, and present or former enlisted men of all the services, as associate members, regardless of branch or component. This will allow many mobile minded officers outside the Armor branch to take an active voting part in the affairs of the United States Armor Association, the oldest of the ground arms associations—an organization which is proudly celebrating its sixty-eighth birthday this November.

In consonance with this proposal to broaden our base, the council further directed that a poll be taken to approve an increase in the number of members of the Executive Council from twelve to eighteen. This will allow for expansion to give wider representation through the enlarged council, not only to key Armor installations but also to other branches and services as deemed appropriate.

As stated in paragraph 6, Article IV of the By-

laws "It is desirable that a number of the members of the Executive Council be residents of the vicinity of the headquarters of the Association." Certainly, representation can be well chosen from the wealth of personnel available from all services and branches in the Washington, D. C. area. The reason for having some members in the vicinity of the Association's headquarters is that it allows for the immediate attention to business matters.

As heretofore mentioned, but deemed worthy of reiteration, much thought has been given by the council prior to the presentation of these proposals to our active membership for a vote. Subcommittees of the council investigated all the facets before making a firm recommendation pertinent to the amending of the constitution. When you receive your notice of the annual meeting, it will contain proposed changes to the constitution, and it is hoped that you, too, will give it serious thought when casting your ballot. If you are planning to attend the sixty-fifth annual meeting at Fort Knox, Kentucky on January 29, 1954—and we hope you are—you will have more time to weigh your decision before the final vote is taken.

Irrespective of the outcome, we are striving, as we come to the close of another year (and volume LXII of ARMOR), for a bigger and better organization in order to further the aims and purposes of the United States Armor Association to disseminate knowledge of the military art and sciences with special attention to mobility in ground warfare, and to promote the professional improvement of its members.

CAST YOUR BALLOT!

Sum & Substance

A regular feature in *ARMOR*, where you may express your views in approximately 500 choice words—the effective medium between the letter and the article. This section is open to all on any subject within the bounds of propriety. Name and address must accompany all submissions. Name will be withheld upon request. No pseudonyms.

To keep an Armored Division moving requires full support from all the Technical services. ARMOR focuses the spotlight on the 123d Armored Ordnance Battalion, 1st Armored Division to find out some of the problems—and how to solve them—involved in rendering adequate Ordnance support to an Armored Division.—Ed.

The writer of the following, a 1941 graduate of the United States Military Academy, served in the European Theater of Operations as S3 of a Field Artillery Battalion. Subsequent to the war he attended the University of Michigan for three years, then was assigned as an instructor in Mathematics and Ordnance matériel at West Point. Following his successful completion of the Ordnance Advance Course in June, 1953 he assumed command of the 123d Armored Ordnance Battalion, First Armored Division, Fort Hood, Texas.

The 123d Armored Ordnance Battalion of the 1st Armored Division was reactivated at Fort Hood, Texas in April 1951. At this time it was manned by a small cadre of trained officers and noncommissioned officers and enlisted men without basic training. This situation necessitated going through a basic training cycle, then advancing into technical training, which made it a slow process of becoming a battalion capable of carrying out its support mission; however, by February and March of 1952, the 123d Armored Ordnance Battalion was capable of performing its mission.

The mission of the Armored Ordnance Battalion is to furnish ordnance supply and maintenance support for all ordnance items used by an armored division. It must perform this mission and still remain mobile enough to keep up with the fast-moving combat command.

The Armored Ordnance Battalion consists of three identical lettered companies and a Headquarters and Headquarters Company. Each letter company normally supports a combat command, with the Headquarters and Headquarters Company supporting

the division headquarters and division trains units which have the greatest density of wheeled vehicles.

The large amount of ordnance items in an armored division requires more spare parts than it is advisable for the armored ordnance unit to carry. This requires close contact with supporting depot companies or with Post Ordnance when in garrison.

In a combat type operation the Armored Ordnance Battalion must be careful not to keep a job that requires too much time for repair. In these instances the item must be replaced and the repair job evacuated to a heavy support ordnance unit. It is estimated that the Armored Ordnance Battalion can repair and return to the using unit 80% of the work requiring field maintenance and must replace and evacuate 20% of its work in order to remain mobile and give close ordnance support to the armored division.

In addition to the mission of fur-

nishing field maintenance support, a large percent of the ordnance effort is spent in advising, training, and supervising organizational maintenance in the using units. It is also part of the Armored Ordnance Battalion's mission to furnish technical assistance on command inspections and to perform spot check and technical inspections of all the ordnance items in the armored division.

The Division Automotive Officer is responsible for the overall supervision of the organizational maintenance within an armored division and attached units. It is his duty to insure that no unauthorized maintenance is performed by the using unit, to assist the using unit in the maintenance program by instruction and advice. It is the responsibility of the Division Automotive Officer to keep the Division Ordnance Officer advised as to the status of the ordnance equipment in the hands of the using unit, also to report abuse or malpractices of supply economy and good maintenance procedures within the division. He maintains a spot check team using the road block system to determine the condition of organizational vehicles. This information passed on to the unit supporting the unit found deficient will aid the Advisor-Instructor team in the performance of their mission.

The Division Ammunition Officer is responsible for the control and processing of transportation orders, ammunition issued and turned in from all units within the armored division. In combat an ammunition supply point may be established, if necessary; however, an ammunition company or detachment will normally be attached to the division to handle the ammunition since there are no personnel provided by the TO&E to handle the ammunition. All ammunition issued

All photos—U.S. Army



Lt. Col. O. C. Tonetti

is handled by the unit ammunition personnel. The Division Ammunition Officer has the overall supervision of an "Ammunition Parking Area." This area is for temporary storage of ammunition for the units. The area is located near the ranges and convenient to all units of the division.

To aid in the gaining of technical knowledge by the enlisted personnel of the battalion, an extensive "On the Job" training program is in operation, enabling the men to acquire necessary skills by practical work. Qualified service school instructors are utilized for this training.

The complex hydraulic and electrical systems in the new family of tanks require constant training of our personnel to insure the support of an armored division. This training is achieved by service school attendance and by our internal training program.

LT. COL. O. C. TONETTI

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The writer of the following served with a Tank Destroyer Battalion during World War II. Subsequent to the war he served in Korea as an enlisted man. Upon recall to commissioned status he was assigned to the Tokyo Ordnance Depot. Returning to the United States in early 1953 he was assigned to the 123d Armored Ordnance Battalion, recently assuming command of the Headquarters & Headquarters Company.

The Headquarters & Headquarters Company, Armored Ordnance Battalion is organized under TO&E 9-66. It includes the personnel for the Battalion Headquarters (including the office of the Division Ordnance Officer, Division Ammunition Officer, Battalion Headquarters, and office of the Division Automotive Officer). The Battalion Headquarters Section is further subdivided into the battalion administrative section, personnel section, supply section and communication section.

The Headquarters Company is composed of a Company Headquarters Section, Battalion Ordnance Supply Section, Salvage and Recovery Section and Maintenance Section.

The objective of this unit is to provide planning and supervision of all ordnance activities of the division, to include communication, supply, administration and recovery activities.



1st Lt. R. G. Edmonson

The Company Headquarters is the "housekeeping" section of the Company. Here we find the messing, billeting and supply facilities for the company. The supply section is charged with the responsibility of caring for all the items of supply for the company, which includes all of the many special tools required for maintenance and salvage and recovery operations.

The Ordnance Supply Section is without a doubt one of the more important sections in the battalion. Without this section all maintenance is bound to be stopped. This section controls the supply of all parts and major items in the hands of the using units. To deprive the using units of spare parts or major items (tanks, trucks, instruments, weapons, etc.), would impair the operations, mobility, and fire power of an armored division. Maintaining mobility is the key to the effective operation of an armored division. The supply section is also charged with the responsibility of evacuating unserviceable items to higher echelons for repair. Each ordnance item no matter how large or small must be funneled through this section into the division. The same channels are followed for items being returned for repair or turn-in to higher ordnance units.

The Salvage and Recovery Section consists of six 45-ton tank transporters and five 5-ton wreckers. The mission of this section is to augment the evacuation facilities of the combat units in the field.

When the armored division is in the field or in combat, the salvage and recovery section has a tremendous assignment. Usually this section works around the clock. These men must be muscular and have a keen sense of responsibility. The work is very heavy and requires imaginative powers in the assembling of the rigging to recover vehicles and prevent further damage to the vehicle being recovered. There are many qualifications necessary in selecting personnel for this section. Some of these qualifications are physical stamina, driving ability, mechanical aptitude and dependability. Usually these men work under the most adverse conditions. It is not uncommon in combat operations to find a disabled tank covered by enemy fire. This always presents a special problem to the transporter crew in attempting to recover the vehicle.

The Maintenance Section has the mission of supporting all non-tactical unit equipment in the division. The equipment consists primarily of wheeled vehicles. There are no track laying vehicles supported by this section. The maintenance section is completely mobile and can move on very short notice. All equipment is mounted on trucks or shop vans. The personnel of this section work in close coordination with the salvage and recovery section. Supplies for the section operations are furnished direct from the Battalion Ordnance Supply Section. All 2d and 3d echelon maintenance of the vehicles in Headquarters Company plus the direct support mission of maintaining vehicles of the non-tactical units of the division, falls upon the maintenance section. The work load is controlled by the Battalion Maintenance Officer, who is responsible for the allocation of the work load between all the maintenance sections in the battalion.

1ST LT. ROBERT G. EDMONSON

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The writer of the following served in the European Theater of Operations during World War II with the 13th Armored Division. Upon recall from enlisted status to active duty in 1950 he was assigned to a military post in Germany. Returning to the United States in 1953 he assumed command of A Company, 123d Armored Ordnance Battalion.



The tracked vehicle repair section removing the power pack from an M47 tank.

The mission of the lettered ordnance company in the Armored Ordnance Battalion is to support a combat command whether in combat operations or in garrison operations.

All organizations within a combat command must be served with ordnance maintenance as close as possible to the front lines to keep as many vehicles, artillery pieces, instruments and small arms on the line as possible.

The Company is organized as follows: A Company Headquarters consisting of Company Headquarters, Company supply, Company mess and Company Shop Office. The Company Shop Office is responsible for coordinating the functions of a Shop Supply Section, Service Section, Wheel Vehicle Section, Track Vehicle Section and an Armament Platoon consisting of an Artillery Section, Small Arms Section and Instrument Section.

The Shop Office, which is located in the company headquarters, receives the work coming in from the organizations. The work is inspected, parts predetermined and requisitioned from the service and supply platoon. When parts are available the work is sent to the appropriate section for repair. In any case where minor repairs are needed, a small contact team is sent to the using organization when in garrison or the vehicle, artillery position or

unit requiring the work, when in combat, and is repaired on the spot. This team saves the time of evacuating the job to the repair shops and at the same time permits the unit to have the job repaired without losing the item to ordnance.

In most cases repairs are made by contact teams while in combat or field exercises. The contact team may also give assistance to the using units by instructing the organizational mechanics in the performance of their



Capt. J. D. Lewis

duties. The contact team is very valuable to an ordnance company in the performance of its mission. In the event that this team should locate a unit in need of ordnance assistance they may offer any assistance they are capable of offering to the unit. Roadside repairs are authorized and encouraged by ordnance personnel.

The mission of the Service Section is to repair any item not normally repaired by any other section in the ordnance company. Jobs that may be performed in the service section are body and fender work, painting of vehicles, welding, manufacture of special tools, all types of carpenter work, and canvas and leather repair. The Service Section has a machine shop truck in which there are lathes, shapers, drill presses and many other related items of equipment. In the body and fender repair this unit is limited only to minor repairs such as straightening trailer tongues, bracing broken fenders, patching punctures in body and spot painting. The welders assigned to this section must be capable of welding armor plate or in some cases making a part to replace one that has been broken and cannot be obtained through normal supply channels without undue delay. This section is frequently called upon to modify vehicles and other items of ordnance equipment to permit the equipment to be operated safely or more conveniently as the situation warrants. A very good example of the work this section may be called upon to do was in Europe during World War II when the tanks could not break through the hedgerows. Forks were made from obstacles found on the beaches and welded on the front of the tanks. These forks merely lifted the hedges out of the ground and drove on through.

The wheeled and tracked vehicle sections receive and repair all vehicles from the using units. If a vehicle is received that is damaged beyond repair by field maintenance or would require undue repair time, that vehicle is evacuated to a higher echelon. The initial inspector at the shop office is the person who determines whether the vehicle can be repaired by the shops or not. Normally the vehicle will be evacuated when a major item replacement will not repair the vehicle. The ordnance wheeled and tracked vehicle repair shops are capa-

ble of replacing such items as engines, transmissions, clutches, grinding valves, differentials, relining brakes and repairing electrical and fuel circuits.

The Artillery Section is responsible for the repair of all artillery pieces within the Armored Division. This section is capable of making the repair on the spot or in the ordnance shops. Normally the section can make the repair in a few hours and if at all possible at the emplacement. If the repair cannot be made in the unit or in the ordnance shops the piece is evacuated to a higher echelon.

The small arms section usually makes repairs at the using units. A large part of the small arms repair could be made by the using organization provided the proper personnel were assigned to them. The small arms team contacts the battalion aid stations where they pick up weapons, repair them if needed and return them to serviceable stock.

The instrument section cannot operate in the forward areas very effectively. Therefore most of the work in the instrument section is direct exchange and in this way the using units are not without the particular instrument over any extended period of time.

CAPT. JOHN D. LEWIS



The writer of the following served in the European Theater of Operations during World War II with a Tank Destroyer Battalion. Subsequent to the war he was released from active duty and reenlisted as a Master Sergeant in ordnance. Upon recall to active duty in 1946 he was assigned to Europe with an ordnance unit in direct support of the U. S. Constabulary. Returning to the United States in 1951 he assumed command of B Company, 123d Armored Ordnance Battalion.

The potential firepower and mobility of an armored division in the field is measured by the state of operative readiness of its ordnance equipment. Failure of one artillery piece, machine gun, or tank may mean the loss of a platoon or company of tanks. The mission of the ordnance company is direct support in the field of operation. This is backed by organized



Capt. T. H. Tyner

maintenance, availability of supplies, and continuous flow of ammunition to the troops on the line.

Direct support not only includes working in the ordnance company shop area, but includes constant contact, supervision, and maintenance within supported unit areas as well. This constitutes well established and well trained instructor-advisor teams working continuously with the equipment and personnel using the equip-

ment in the field. These teams consist of artillery and small arms repairmen, track and wheel vehicle repairmen, each man carrying his own tool set. The number of personnel depends on the specific assignment. The vehicle is equipped with special tools and fast-moving items of supply such as carburetors, fuel pumps, spark plugs and voltage regulators.

The ordnance direct support company is equipped with personnel, tools, and general supplies to effectively support approximately one-third of an armored division. This is equivalent to one combat command. The breakdown of the Company is as follows:

The Company Headquarters, the Automotive Platoon (consisting of wheel vehicle and track vehicle repair sections), the Armament platoon (consisting of artillery, small arms, and instrument repair sections), and the Service and Supply Platoon.

This Company is 100% mobile and is capable of advancing with the movement of their supported units. This sometimes means leaving teams behind to complete maintenance jobs on heavy equipment and later join up with the advance. Well organized teams, as mentioned previously,



The artillery section repairing the seat on the breechblock of a 155mm howitzer.

equipped with tools and fast-moving vehicular parts, are working on the line and patrolling main supply routes in the zone of operation. This is evidenced by the fact that repair of equipment where it fails saves time and unnecessary delays of field operation. To move this amount of equipment, a company has approximately sixty organic vehicles. Sixty vehicles in a bivouac spaced seventy-five yards apart cover a very large area. Also there must be space provided to park vehicles in the bivouac area.

Security is dependent on outpost guards, well camouflaged equipment, trip flare and/or other warning devices. Internal communications are maintained by a telephone net. Work at night is carried on in blacked-out shop vans and maintenance tents.

Contact with division maintenance and supply is by continuous wave radio or voice radio where distances permit. The radio nets must be kept open 24 hours a day to facilitate the flow and control of ordnance equipment.

The Ordnance Company may be called on to assist in battlefield recovery of armored equipment. Each armored unit in the division is equipped with one or more tank recovery vehicles. The using unit would normally move the damaged tank near the main supply route and notify the Ordnance Support Company. Upon inspection of the tank and finding that it was not economically repairable or that the time limit for repair was too great, it would require evacuation. Division maintenance would be notified by radio as to the location and a tank transporter would be sent out from Headquarters Detachment to move the tank to the rear. At the same time arrangements would be made for immediate replacement.

We place a great deal of emphasis on service to the division. Our job is to provide the service wherever and whenever it is needed. Tanks keep getting bigger and faster and it taxes the ingenuity of armored ordnance personnel to the utmost to keep them rolling at top speed. We are proud to be a member of this great armored team.

CAPT. TED H. TYNER



The writer of the following served as an enlisted man for more than 13



1st Lt. C. C. Ralph

years and saw duty in the Pacific during World War II. Commissioned in 1950 he was assigned as an Infantry Regimental Maintenance Officer in Europe. Returning to the Zone of Interior in 1952 he assumed command of C Company, 123d Armored Ordnance Battalion.

The mission and responsibility of C Company includes direct supply and maintenance support for two tank battalions, one quartermaster battalion, two field artillery battalions, one armored infantry battalion, Headquarters, Reserve Command, and Headquarters, 17th Armored Group, an attached unit to the 1st Armored Division.

The responsibility of direct support includes technical advice and assistance to the operators of ordnance equipment by sponsoring "Advisor-instructor teams" and actively participating in the Command Spot Check Program and technical inspections of ordnance equipment in the hands of the units which we support. Basic loads and replenishment of organizational spare parts are closely supervised to assure that operating supplies are on hand or on requisition at all times. A unit cannot discharge its responsibility for organizational maintenance when short of supplies.

An Inspector-instructor team is in operation which we call the "Advisor-instructor team." A majority of the

officers get the wrong impression when they hear the word inspector. The team is composed of eight men representing automotive, instrument, armament, and supply. Units that indicate a lack of preventive maintenance are the first units scheduled for Advisor-instructor service. Each using unit receives the inspector service as often as necessary or when it is called for by the respective battalion commanders. All commanders have a standing invitation to call for the team any time they feel it necessary. In cases where maintenance and supply procedures are found to be unsatisfactory, a follow-up instruction-inspection is made within 30 days. As a result of these visits, the exact status of the maintenance and supply, to include status of the small arms, basic load in each company or battery, is known. A complete report of each ordnance activity can be given to the battalion commander, which is thoroughly appreciated, as the purpose of the Advisor-instructor service is to help using units and not "gig" them. Any ordnance unit which does not have an Advisor-instructor team should initiate one immediately, as it creates good will between ordnance and the using units. Battalion commanders take positive action to correct existing deficiencies once they are aware of their existence.

As a direct support company, we are required to be completely mobile. Our supply is operated from trucks with the exception of the heavy units which could be loaded in a short time. All sections have the greater part of tools and equipment mounted on shop vans. This company is prepared to move, with TO&E, from garrison on a three-hour notice and can be operational within the hour after closing in bivouac area. Once in the field we can evacuate an area in an hour provided vehicles in the shops do not present a towing problem.

We, as supporting ordnance, try to detect incipient failure and initiate corrective action in the using units before a major problem presents itself. It must be remembered by all echelons that it has been conclusively proved that one good hour of instruction to the user by fully qualified ordnance personnel at the position of equipment saves five hours of repair at a later time.

1ST LT. CARL C. RALPH

Doctrine of Guderian as written in his now famous book, "Panzer

Leader," is well known to the mobile minded. Not so prominent is

the fact that he set down these theories in an earlier publication in

1937. These he put into practice during the early days of the War.

Heinz Guderian



Father of Armor

by LIEUTENANT COLONEL M. C. HELFERS

EVERY living organism has a father. By analogy a vital movement or organization soon claims a father. Oftentimes the originator or first head of a movement or organization is recognized as its father as, for example, Washington is known and accepted as "Father of his Country." Not always is this the case. Sylvanus Thayer, although connected with West Point as a cadet from 1807 to 1808, did not become its head until 1817, fifteen years after its founding. However, his influence on the Military Academy and its development was such that he is generally remem-

bered as the "Father of West Point."

Guderian's influence on Armor is very similar to Thayer's influence on West Point. Without attempting to develop this analogy—for, as the Romans already knew, every simile limps—one point in Guderian's career as a Panzer leader deserves special mention. Not until late in 1928, while he was detailed for four weeks to the Swedish Army, did he actually drive a tank for the first time. This was only shortly after he sat in one for the first time. It was eleven years after the British committed tanks for the first time in battle.

There are many interesting things in Guderian's career which bear on the subject at hand. Noteworthy is his thorough study after 1928 of the literature, mainly foreign, on tanks. Guderian does not minimize the value

he derived from the writings of Fuller, de Gaulle, Heigl, Nehring, Kurtzinski, Von Schell, and Liddell Hart. Neither does he minimize the value of his study of military history, in this respect particularly the Cavalry engagements of 1914 and battles in which tanks were committed in World War I. Guderian tackled his problem like any intelligent man would. He thoroughly, *not superficially*, studied the past not only of his own nation's experience of the subject at hand but also the experiences and writings of other nations. It might be added here that this foreign study in no way affected his loyalty and his love for Germany, a loyalty and love which in some circles has been interpreted as reactionary, but which is nothing more than a sincere desire to see his country live and its honor re-

LIEUTENANT COLONEL M. C. HELFERS, retired, served in Europe during World War II, with the Third Army in an Intelligence capacity. He is presently the Chief of the Foreign Studies Branch, Office of the Chief of Military History, Department of the Army.

stored to its former world standing.

For the student of the history of Armor there is no real substitute for the reading of Guderian's book, *Panzer Leader*, or better still the German version, *Erinnerungen eines Soldaten*. The reader, at this point, may be interested in a brief sketch of his military career.

General Heinz Wilhelm Guderian was born on 17 June 1888 in West Prussia. On 28 February 1907, after six years of cadet training, he joined the German Army as an officer candidate. He attended the War Academy for one year, 1913-1914. His World War I experience was limited almost entirely to staff duty at division and higher level, mostly in signal communications. From 1918 to 1934 his assignments alternated between troop duty and the Defense Ministry, concentrating on motorized units or agencies charged with motorization after 1928. In 1934 he became Chief of Staff of the Inspectorate of Motor Transport Troops. 1935 saw his appointment as Commanding General of the 2nd Panzer Division; 1937 the appearance of his military best-seller, *Actung! Panzer!*¹ which he wrote at the suggestion of his immediate superior for the purpose of presenting the case of armored warfare. Early in 1938 he was named Commanding General of Germany's only armored corps; later in the year he was designated Chief of Mobile Forces. In Poland and in France he commanded the XIX Panzer Corps. He commanded the Second Panzer Army, which started the Russian Campaign with three armored corps, until 26 December 1941, when he left his command, having been relieved for failing to meet Hitler's impossible demands. His request for a court-martial was denied and he spent the next thirteen months on inactive duty, during which time he suffered considerably from a heart ailment. In February 1943 he was recalled and named Inspector of Armored Troops. On the 21 of August 1943 he became the last Chief of the German Army General Staff, a rather impossible position in view of the increasing power of Himmler and the SS. On 1 April 1945 he was furloughed for a second time, thus ending an active military career of over thirty-eight years. His last promotion, that of general, was on 19

¹Attention! Tanks!

July 1940. Hence, as in World War I, he received only one promotion during the war years. His highest decoration was the Knight's Cross of the Iron Cross with Oak-Leaf Cluster.

This biographical sketch is sufficient to show in outline the part Guderian played first in the build-up of German armored forces and later in their employment in battle. Of particular note is his next to last assignment, that of Inspector of Armored Troops, which he continued to hold after he became Chief of the German Army General Staff. It is here that he stressed the importance of systematizing the literature on armor and getting the lessons of battle down to the



Consulting with a subordinate officer during the Blitz across France.

fighting units without delay. Most important though is that uniqueness of his career which permitted him to formulate in peacetime his theories about the employment of Armor, at the same time being a leading participant in the organization and training of armored units, and to see his theories sustained in battle, again being a leading participant as commander of large armored formations. *It is this uniqueness, this dual role, which clothes him with the mantle of "Father of Armor" and which rules out other early champions of Armor, such as General Chaffee, who unfortunately died before he could carry his theories into effect, General Patton, who like Rommel benefited from*

what Guderian had already done, and General Fuller, whose contributions were mostly with the pen.

The armored sweeps of Guderian in Poland, in France, and in Russia are so well known that they need only be mentioned here. It was here that his theories were put into practice. They were not found wanting. Not so well known is the fact that Guderian had previously placed his theories in writing for those who expected to "run" with Armor "to read." This he did most succinctly in 1937 in an article on "Motorized Combat Troops" in Volume II of *Guide to Modern Military Science—The Army*.² A translation of Guderian's combined answer to the questions—Are tanks merely an auxiliary weapon of the infantry? Are they also capable of independent commitment? Is independent commitment their primary mission?—is given below without abridgement or change other than italicizing the one paragraph which the writer considers the most significant. It is left to the reader to decide whether the nominating committee at Valhalla has not already agreed on the name of Guderian as the "Father of Armor."

"Many people believe in the traditional viewpoint that the Infantry is the 'Queen of Battle,' that as such it is and will remain the principal arm, and that all other arms exist exclusively as auxiliaries to the Infantry and must therefore take this basic assumption into account in their organization and combat tactics. One of the sad lessons of World War I is that the increasing effectiveness of weapons, especially of machine guns, first led to the complete elimination of the Cavalry from the battle field and then forced the Infantry to take cover behind barbed wire and in trenches and, if its attack was to make any progress, to have recourse to other arms to a degree that could no longer be reconciled with the above royal title. During World War I infantry attacks launched after 1915 succeeded only when they were supported by artillery superior to that of the enemy, by the employment of chemical agents, or by a sufficient number of tanks. As a rule, however, the effect of theartil-

²Franke, Hermann, editor, *Handbuch der Neuzeitlichen Wehrwissenschaften*. Berlin: Walter de Gruyter & Co., 1937. 2 Volumes. See "Krafftfahrkampftruppen," pp. 382-402, in Volume II.

lery fire and chemical agents, on which the Central Powers relied primarily for the success of their attacks, was not sufficient to break through the enemy lines and thus bring about decisive results because of the Infantry's inability to exploit initial successes with the necessary speed. Decisive victories in battle did not seem feasible until toward the end of the war, when masses of tanks and close-support planes were committed in surprise attack. These two recent weapons were not fully developed by the end of the war, and both remained auxiliary arms until 1918. Since then their technical development has advanced rapidly, thus permitting equally fast tactical progress. Owing to this development, the German Air Force has attained full independence as the third service of the Armed Forces, while the German Tanks Troops—remaining within the framework of the Army—together with their essential technical service units are in the process of developing into a new major branch, the Armored Force, without the cooperation of which a decisive combat action of the future can hardly be conceived.

"In ground combat the tank is above all an instrument of attack. It is well armed with guns and machine guns and therefore has strong firepower; it can surmount trenches and wire entanglements; it is proof against machine gun and infantry weapons fire; it is considerably faster than all non-motorized weapons; and it can be directed by modern means of communication when integrated into major units.

"As soon as the necessary motorized technical service units are made available, tanks—together with these units—may be organized into major units (divisions and corps), which will be suitable for every type of independent commitment, such as attack and pursuit, defensive offense, and cover for a withdrawal. Rigid passive defense is the only type of action in which it is better and more economical to employ infantry divisions with sufficient antitank protection.

"Armor is the instrument of attack, surprise, and mass commitment. With its support victory in battle may be realized and exploited. The experience of World War I has shown that in all attempts at major breakthroughs the attacker was denied ultimate vic-

tory on the battlefield because he was incapable of exploiting initial successes into complete breakthroughs. This failure was caused by the lack of fast and powerful forces capable of achieving breakthroughs and launching pursuits. Today such forces are available in the form of integrated armored units. The problems that must now be solved are to organize these units so that they will do justice to their assigned mission and to implement the training of the necessary commanders. As early as World War I the Allied armies had the bitter experience that tanks committed in small units and in close attachment to infantry suffered heavy losses, if they



He gives last minute instructions to a commander on the Eastern Front.

were not altogether annihilated, and that the Allied forces did not even derive the potential advantage from such sacrifice. These serious consequences of committing tanks piecemeal arose despite the fact that the Germans had hardly any organized antitank defense system and, aside from artillery guns, no armor-piercing weapons, if one disregards the few 13-mm. antitank rifles that fired single rounds and whose performance was unsatisfactory. Armies that might be involved in a future war will have to anticipate the employment of tanks and make appropriate defensive preparations in peacetime, because the unrealistic commitment of tanks, based on erroneous assumptions about

the effectiveness of defensive weapons and the potentialities of tanks which in turn would lead to faulty organizational measures, will have much more serious consequences than in 1918.

"In answer to pending questions one may state that in the future tank forces should primarily be employed independently if they are to be most effective, that the essential auxiliary and technical service units should be organically integrated into the armored formations, and that—in exceptional cases arising from the tactical situation—the latter should also be made available for direct support of infantry. It would be appropriate, however, not to base the organization of the entire armored force on such exceptional circumstances and thus repeat the organizational mistake from which the German cavalry suffered so much in 1914.

"No matter what type of organizational structure will be adopted for the armored force, the principal mission for which it is intended will exert a strong influence on the future technical development of the armored vehicle.

"Tanks that are designed primarily for operating in conjunction with slow infantry units have no need for great speed, long radius of action, or heavy armament; on the other hand, they must be capable of remaining a long time under the fire of numerous defensive weapons and of protecting themselves against enemy tanks. Tanks destined for this mission will have to be heavily armored with an armor-piercing gun and several machine guns, and their engine weight and fuel capacity will have to be reduced in favor of thicker plates of armor. But it must be realized that, to be effective against modern defensive weapons, protective armor must be of great strength, which in turn means that the cost and weight of infantry tanks will be considerable.

"On the other hand, tanks which are to operate primarily on independent missions must have great speed, a long radius of action, and at least some of them must be equipped with long-range guns. To comply with these requirements, the strength of the armor may be reduced, whereas greater emphasis will have to be placed on powerful engines and ample supplies of fuel and ammunition."

The degree of realism obtainable in a field problem is limited only by the imagination, ingenuity, and initiative of the testing group. Control of the group being tested must be balanced carefully between experience and common sense.

PLANNING AND UMPIRING THE TANK BATTALION TEST

by **LIEUTENANT COLONEL DAN S. McMILLIN**

ONE of the earliest and most important assignments of the 19th Armored Cavalry Group was the testing of all tank battalions of Western Germany, with the exception of its own attached battalions. Undoubtedly the testing of the units of the 2d Armored Division proved most informative and most instructive to our group. Utilizing all the splendid resources and the wealth of armored experience within the division, the combat command and division staffs introduced features into the tests that took the problem itself out of the ordinary and placed it in the category of a thoroughly planned and enthusiastically executed combat test.

Army Training Test 17-7 prescribes the basis on which the tank battalion proficiency test is to be administered and rated. The excellence and all round scope of this annual test is limited only by the imagination, in-

itiative and ingenuity of the testing group. During both the planning and execution phases, experienced personnel have found that there are three primary factors which must be included in order for the problem to be taken out of the realm of an ordinary field maneuver and become an intensely interesting and educational type of combat attack to the participating unit.

First—The tank battalion test must stress training in conjunction with the actual test itself. Today, with limitations placed on time, money, and personnel, every occasion for concurrent training must be exploited to the fullest extent. Here is one of those relatively scarce opportunities to train your unit in the value of combined arms working in one closely integrated combat team—armor, infantry, engineers, artillery and air. Write and conduct each test so that major errors are corrected as they occur, and the tested unit personnel see the correct methods of employment. Far more is accomplished by on the spot corrections during the test than by calling attention to the errors during the final critique. As part of your test,

write in and employ both aggressor and friendly air. Never for a moment allow your tested unit to forget the ever-present threat of aggressor air or the assistance which is theirs by calling on friendly air. The intelligent use of air during the problem may well mean the success of either the attack or defense phase. The actual use of air at every opportunity trains your tankers in the capabilities of the fast fighter-bomber type aircraft of today's modern warfare.

Second—Stress and demand realism throughout. Without realism any field test at once becomes another routine combat drill, in which the enthusiasm of the participants, umpires included, fluctuates from zero to a minus 10.

In recent tests conducted for battalions of the 2d Armored Division, exceptional use was made of pyrotechnics to supply realistic tank and artillery fire and air strikes to the attacking battalion. A generous supply of blank ammunition for all types of weapons afforded the necessary realism for the tankers and armored infantrymen. Throughout the entire test, an artillery fire simulator team, tied into the action by radio com-

LIEUTENANT COLONEL DAN S. McMILLIN, Armor, served in Europe during World War II. After the War he was reassigned to Europe, serving in the Constabulary and as Executive of the 19th Armored Cavalry Group. Recently returning Stateside, he is presently assigned to the G3 section, Headquarters, Second Army.

munication, and well supplied with pyrotechnics, moved with aggressor and friendly forces. Charges of TNT, set at strategic points, represented mines, artillery and booby traps. Concentrations of artillery were represented by smoke. The careful planning and execution of this phase of the plan was so well accomplished that at one point during a particularly heavy "shelling" of a combat team attacking through woods, one veteran tank commander was heard to remark, "D - - ! if I don't feel like starting to duck again."

A tank destroyed by ground fire or air attack can be realistically portrayed by an umpire rolling a red or green smoke grenade under the vehicle. At the same time, the destroyed tank runs up an orange flag and turns its tube to the rear. This method gives realism to the combat area, and at the same time affords a certain amount of satisfaction to the tank commander and gunner, as he can look to the front and actually count the number of "burning" aggressor tanks.

On the final objective, closely coordinate with the artillery and bring in a live artillery concentration ahead of your assaulting armor. It adds to the test and allows the many new and inexperienced men now in the army to see the close support which modern artillery can offer. If the umpires are in thin-skinned vehicles, drop them off at observation points prior to going into the final assault phase.

In furtherance of realism, insist on the use of camouflage in the assembly and attack positions and carry this camouflage throughout the problem. What appears to be an evergreen tree in the distance turns out to be a tank. In one tank battalion of the 2d Armored Division, the use of camouflage on tanks and APC's was so skillfully carried out that it was difficult, except in completely open areas, to pick up any of the attacking force. Allow tank crews to use their own initiative in the arrangement of natural camouflage. Point out the good examples, and at the same time explain why other tanks are poorly camouflaged. A photographer, employed to take pictures of various phases of the problem, can be invaluable in supplying material for use in later training conferences.

The umpires themselves are a ma-

ior factor in the building of realism. They must carefully evaluate the effect of friendly and aggressor fire and assess casualties accordingly. Means of marking vehicular casualties has been previously covered. Personnel casualties can be tagged and sent back through normal medical evacuation channels. A check of the number of casualty tags at the aid station against the number issued gives a good reading on the effectiveness of the battalion evacuation plan.

An aggressive and determined aggressor force perhaps contributes more toward realism in the test than any other single factor. Select your aggressor force and commander carefully. Pick a commander that is known for his energy, imagination, and ability to size up a situation and react quickly. He should be intimately acquainted with the terrain over which he is to operate. Lacking previous knowledge of the area, the aggressor commander should make a thorough reconnaissance of the battle zone, study the critical terrain and approaches, and formulate plans for the attack and the defense. Since it is the tank battalion and not the aggressor force being tested, it is well to acquaint the aggressor with the friendly attack plans. In this way a meeting engagement can be effected, and the action will take place on the critical terrain features and approaches. In addition to adding realism to the problem, an alert, intelligent aggressor commander can offer excellent comments on actions of the tested battalion for the umpires to use in the final analysis and rating.

Third—Similar to practically every other phase of military operations, the tank battalion test is successful only in proportion to and type of control that is exercised. Control, control, control—this must be stressed throughout. Only one word of caution here is that the problem must not be overcontrolled to the point that the action and the enthusiasm of the unit suffer. First in the control channel come the ability, common sense, and experience of the umpires themselves. Umpires must be carefully selected and experienced enough to render sound, logical decisions throughout the test. The tank battalion can be made or broken by this test, so they deserve the best in umpiring.

During the conduct of the attack

or defense phase, it is an artificiality to bring the action to a halt administratively. (This administrative halt is reserved for an emergency in which lives or property may be seriously endangered by the action.) So often on maneuvers or tests one hears an umpire inform the company or tank platoon commander—"You are held up here for one hour." Not why, just that they are held up. This is a combat situation, and the umpire must give a realistic combat reason for slowing up or halting the action. "You are being fired upon by 4 SP guns and 6 tanks from the high ground on your right flank." This gives the command something concrete on which to base its actions.

All umpires' vehicle radios, both friendly and aggressor, must be on a common channel. In this manner, control can be carefully maintained throughout the problem. By calling the aggressor umpire, any umpire of the tested unit can ascertain just what is facing his force at any particular phase of the attack or defense, and he can make his decision accordingly. In fast moving action, it is the only means by which the chief umpire can keep units located in the attack area. With the play of the aggressor forces on a one for one basis, and by close effective radio tie-in, all meeting engagements, attacks, and withdrawals can be umpired to the mutual satisfaction of both the friendly and aggressor forces.

In conclusion, I have presented only a few points that go into the organization of a well rounded and well executed test. ATT 17-7 must be carefully studied and integrated into the problem as a testing basis. Keep realism and control foremost in your mind when drafting your problem. Remember, it serves as a training medium as well as a test. Your umpires must report in sufficient time that they may be minutely briefed on the plan and terrain. Finally, all umpires must allow the tank battalion to fully exploit the basic principles of armor—mobility, firepower, and shock action. Today with a premium placed on the use of ranges and maneuver areas, as well as the limitations on training time, this test affords an unusual opportunity to present to your command the terrific power and massed offensive action that belongs only to armor.

An

INTERVIEW

by CAPTAIN OLIN C. HARRISON

I NQUIRING REPORTER (to a company commander who has just received his third consecutive rating of SUPERIOR on a big inspection): Captain, to what do you attribute your company's success in getting these splendid inspection ratings?

Capt. Smith: That's easy. My men just do their work well—in fact, very well. The credit must go to them.

Reporter: Come, come, now, Captain; don't be coy. I know your company is made up of average soldiers, and that they are in general no better and no worse than those in other companies which never get ratings like yours. The secret *must* be in the way you operate. Now, what do you yourself do to get such fine results?

Capt. Smith: I didn't mean to be coy about this, and I certainly don't mind telling you all I can about my methods. I repeat that my men are responsible for the company's ratings. That has to be true; there is a vast amount of work to be done in a company, and obviously I can't do it all. I can't even check on every single thing, though I do check on as many things as I can. Realizing this, I have tried to make sure that my men know what they are to do and how to do it; perhaps most important, I have tried to make them *want* to do their work and do it well.

The most important single item in my company is a chain: the chain of command. Now to be perfectly realistic, we can't think of this as a normal

chain, made up of one link after another. Rather, it is in a triangular form, with the biggest link at the top, to which are attached several slightly smaller links to each of which is attached several still smaller links, right on down to the smallest. I am the big link at the top; the next links are my officers; then the noncommissioned officers follow according to their jobs, right on down to the squad leaders; and the smallest links are the men in the squads.

Each "link" is responsible that the links attached to him carry out the orders he issues. But more than that, he is responsible that his links know *how* to carry out his orders—and that includes doing their everyday jobs. I know you can't take a new man and expect him to automatically know all about his duties; he must be taught methods and procedures. If he doesn't know, he must be encouraged to ask questions; and his questions must be courteously received and must be carefully and correctly answered. If one of my links asks me a question, I feel that I must give him the answer; if I don't know it, it is my job as the company commander to get it.

So you see, I don't use the chain of command just as a means of disseminating orders and instructions; I use it to insure that every man knows his job and how to do it. If a man doesn't know this, I consider that it most likely is the fault of his immediate superior, who hasn't seen to it that the man was properly taught.

I'm afraid we sometimes have a tendency to forget that the main purpose of each link in a chain is to hold up the links under it—not to exert pressure on them.

Reporter: That sounds fine, but it also sounds impossible to me. The way you put it, every link in your

chain of command must know everything about the jobs of every man under him, and you have to know everything about every man's job. From what I have seen of the Army of today, I'd say you can't achieve that standard.

Capt. Smith: I don't claim to know everything about every job in my unit, nor do my links know in detail the jobs of all the men under them. But we must know enough about the jobs of the men under us to be able to tell whether they are doing their work right, and we must be able to tell them where to get the answers to their questions if we can't answer the questions in detail ourselves. That takes a lot of studying of manuals, regulations, etc., but it pays off.

Reporter: That seems plausible, and I can see how your methods tend to insure that your men are competent—that they have the ability to do their work. But how do you inspire them to *want* to do their jobs well? That's what appears difficult to me.

Capt. Smith: Well, in any job my company has to do—whether it is policing the company area or engaging in a fire fight with an enemy—I want my men "on my side." I find that I don't have to baby them or coddle them to get them on my side; in fact, my experience is that such methods don't get good results at all. But I do want my men to respect me, and to feel that I am fair and just. I try to gain their respect by proving that I know my job, that I can and will work just as hard as I ask them to, that I have no favorites and that I don't have it in for anybody. Then, I try to make sure that all the links in my chain of command operate the same way.

Speaking of fairness and justice, I find that it is absolutely necessary for

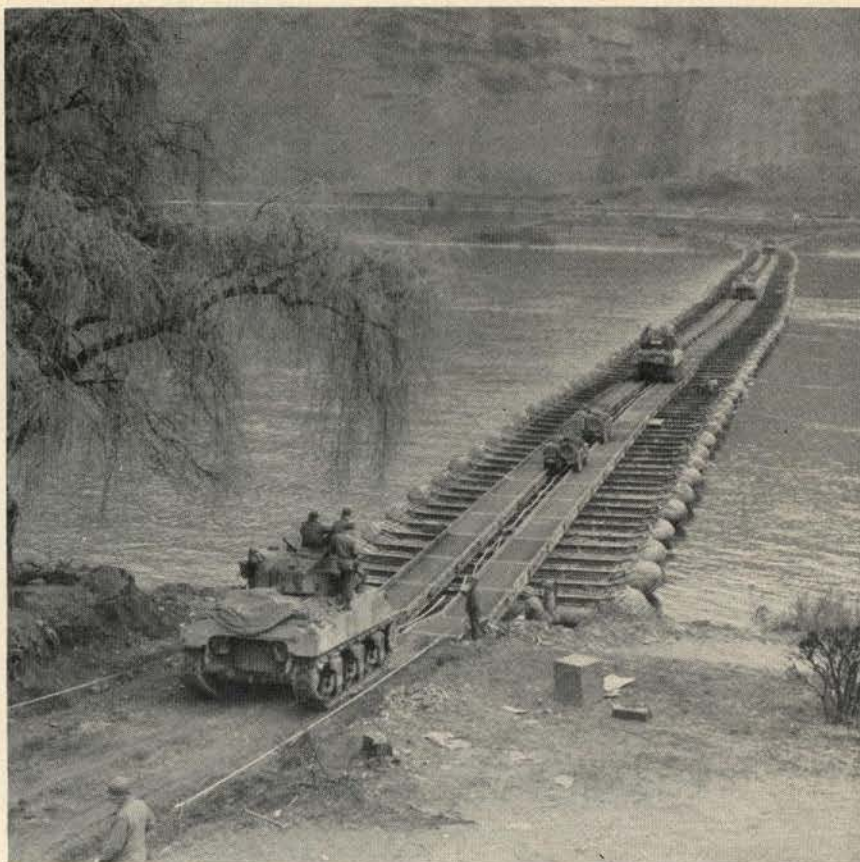
CAPTAIN OLIN C. HARRISON, Armor, served in Europe during World War II. Subsequently, he was assigned to Fort Knox. Having recently completed an overseas tour of duty with the 14th Armored Cavalry Regiment, he returned to The Armored School where he was assigned to the Training Literature and Reproduction Department.

achieved by Armor at Oran was the stimulus needed to insure the production of a fleet of landing ships tank within a new shipbuilding industry that was established along the American inland waterways. It was these ships that featured in many amphibious landings around the world and made the great invasion of Europe relatively easy to accomplish. Waterproofing was also perfected. Standard kits were built for each type vehicle and all maintenance personnel trained in their use. But it must be noted that the planners had not envisaged the full complexity of the problem of landing armored equipment over the beaches before the African operations began. This is not written in criticism but only to point out the challenge posed for the planners.

Even though superior in floating bridges the United States was behind in fixed bridges prior to World War II. In this field the British Bailey bridge was superior to anything American engineers had developed. It was quickly adopted, however, and made enormous contributions in all the great operations in Europe and in many lesser ones including the African Campaign. But again will American planners always be so fortunate as to receive ready-made an answer to their problem?

American road building equipment was superior from the very beginning. It did extraordinary service on distant shores around the world. But the initial equipment included the 5-ton R-4 dozer which was much too small for the support of an armored division. Initially all engineer equipment organic in the armored division, except the ponton bridge, was inadequate for the purpose. In addition, all tank recovery equipment was inadequate. This last equipment did not pertain to the armored engineers although it probably should have because the mere handling of heavy material, such as tanks, is frequently an engineer problem. During the course of the war great improvements were made and the engineer equipment caught up with the heavy combat equipment, but this was only after trial and error.

The greatest engineer shortcoming in World War II, one that probably still remains, was in the detection and removal of mines. Mines are always



Obstacles such as the Rhine River presented a constant challenge to the American Forces during World War II. To conquer them was victory—to fail—defeat.

a menace to an armored command tending as they do to destroy mobility—one of the most important assets of such an organization. As the war progressed the engineers intensified the study of the problem and brought out equipment for both detection and elimination of mines. Some of this equipment, notably the detector, proved successful. But other items such as the "snake," the Mine Exploder T1E3 and the "plow," for example, were not notably successful.

To overcome mines some commanders had a tendency to fall back upon expediency and consider the tank as just another piece of expendable equipment without due regard to the principle of economy of means. There may be occasions where the wholesale expenditure of tanks on reducing a minefield may be justified, but resources must be great and the anticipated results equally great before such a procedure can be justified. On one occasion in Africa a British brigadier expended 30 tanks in breaking a minefield which held up his advance to the east. He succeeded in getting through the minefield but accom-

plished no important results after he had done so. The enemy had already withdrawn from that part of the front, a withdrawal which was indicated by the very nature of the terrain itself. No doubt there were many similar instances of wastefulness during World War II.

The passive threat of mines and of man-made or natural barriers to mobility is of such transcendent importance to the mobile army that special engineering units provided with specialized equipment, itself under continuous study, should be created. At least one of these units should be located at The Armored School where it should be employed in improving and developing new equipment and techniques for overcoming all obstacles to cross-country mobility. This offensive engineer unit should not be hampered by the thinking of the engineer unit charged with the development of equipment and measures for stopping tanks nor by the short-range thinking of armored officers. The mission of such a unit should be so clear that it could not be diverted to some secondary engineering

problem. The defensive and offensive units should always be pitted against each other, but if anything, the offensive unit should be the stronger. Thus, a healthy competition would be developed between the two which should contribute to the solution of both problems.

Armored combat units themselves should strive constantly to improve their own capabilities to overcome mines and obstacles. Measures appropriate to all echelons of command from the individual tank to the higher levels should be developed and personnel instructed in the execution of these measures. This should result in a reduction of the number of vehicles immobilized because of faulty operational procedures or poor judgment on the part of the vehicle commanders or drivers and in speeding the reentry into battle of those immobilized through unavoidable accidents or enemy action.

All those who commanded Armor during World War II can recall many incidents where improvisations, made possible by fertile minds, paid enormous dividends. One that received the recognition of General Eisenhower was the device designed by Sergeant Curtis G. Culin, 102d Cavalry Regiment, which made possible the reduction of the German defensive positions in the hedgerows of Normandy. Culin devised a simple arrangement consisting of a number of prongs made from angle iron which were welded to the front of the tank, thus permitting it to force its way through the hedgerow rather than be stopped or belled down. Although this improvisation was highly commendable, the problem of the hedgerows could have been resolved in training before they were encountered in actual battle, thereby saving lives and precious time. It is suggested that the failure to anticipate the difficulties of traversing the hedgerows and to provide suitable methods and equipment of doing so is still worthy of careful exploration and study by the Army Engineers.

Another example, already referred to, was the joining up of the American ponton equipment with the British prototype LST which, with improvised waterproofing, made possible the successful armor landing in the vicinity of Oran and the quick re-



"On the spot" improvisations hastened the end of the war but prior planning is still worthy of careful exploration by both Engineer and Armor personnel.

duction of that city. But improvisations such as these will become less necessary or even unnecessary when deliberate planning and experimentation have explored the engineer problem to the ultimate limits of human ingenuity.

During the time I was commandant of The Armored School no engineer officer or troops were available. Experimentation at that institution was, therefore, restricted to the field of improvisation. Many fine contributions of this order were made by individuals but no broad and thorough attack of the engineering problem was possible at that time. No doubt there have been improvements since then, but armor officers should always be aware of the engineering aspect of their problems and seek to bring into the mobile arm those Army Engineers who are keen to explore the question of increasing cross-country mobility. This would help to overcome icy inertia that otherwise will eventually freeze ground forces to static warfare. It is a psychological fact that the average human being is defensive-minded and likes to become established in fixed situations—even thinking men conform to the pattern of the average—and this fact is one of the fundamental reasons why the defensive is believed by many to be stronger than the offensive. It also explains why all the great captains have been mobile-minded and offensive in their thinking and acting. They were never willing to undertake the defensive

unless the overriding considerations made it mandatory that they do so and even then they preferred the active defense or, if this were not possible, defense by counterattacking the opposing force after it had become disorganized.

Mobility should not be overemphasized, even in the mobile arm, until it becomes a handicapping catchword. Mobility must be joined to power and directed on vital objectives if it is to be truly decisive. Armor must, therefore, embody in proper proportions all the powerful means of destruction.

It is the combined mobility and firepower encased in the best possible protective covering that make Armor the arm of decision when employed in suitable terrain by a great commander. Adequate engineer support is essential to the mobility of such an arm. Without this support the power inherent in heavy cross-country equipment would be sacrificed and its cost could not be justified. Neither engineers nor armor personnel should be satisfied with the progress so far made. Both should strive for greater mobility in all types of terrain. Improvements in cross-country equipment and engineer support must still further reduce the retarding influence of natural and man-made obstacles to mobility under all climatic and weather conditions. This is one of the most important challenges to the Army Engineers of today and of the future.

65 Years Ago

At the beginning of a war these controversies between extremists as to the relations and duties of the different arms of the service are productive of baneful results. If our infantry commander accepts the claims and statements of the cavalry and fosters expectations of it which are not fulfilled when the time for action comes, he is disagreeably and sensibly surprised, and a commander who is surprised in a campaign is already half beaten. If he shares the unfavorable opinion of the capabilities of cavalry as represented by some writer whom he has read, who is inimical to that arm, then he will not apply it, is not in harmony with it, and unity of action is rendered impossible, and failure is the natural result.

Controversy can only cause mischief. The best results are only secured by both arms acting in entire harmony; they must become so thoroughly acquainted with one another on the drill field as to gain a clear understanding of how each can make application of its special and characteristic strength to re-enforce the characteristic weakness and compensate for the deficiencies of the sister arm.

Letters on Cavalry

PRINCE KRAFT ZU HOHEN LOHE INGELFINGEN

50 Years Ago

As we read the various reviews and criticisms of the South African War, and particularly of the English and Boer cavalry, I believe we have reason to feel more enthusiastic than ever over that arm in our own service. The weakness of the English cavalry at the outset of the war was often shown as it endeavored to cling to old traditions by holding its cavalry to shock action as its only defense, and making it necessary to come into actual contact with the enemy before a blow could be delivered.

In contrast to this, the dismounted action of the Boer cavalry was effective, prompt and generally unexpected in the particular quarter owing to their extreme mobility.

The long line of battle front presents many different phases of combat. Cases will still arise where cavalry intact and protected by the nature of the country can surprise, charge and deliver a blow by contact and shock. Fresh mounted troops will still be able to do good work against an enemy that has been routed and is retreating in disorder. The training of our cavalry for work of this kind should not be neglected.

The principal role of our cavalry to-day, however, is to be able to make quick movements, and when the fight comes, to fight on foot, the horses simply being a function of their mobility.

Some remarks on the Link Strap and Pistol Holster

LT. GEORGE V. H. MOSELEY
First U. S. Cavalry

25 Years Ago

The combat employment of a military weapon is based primarily on its characteristics. Consequently it is necessary to know its powers and limitations to un-

derstand its tactical use. Machine guns have certain peculiarities possessed by no other weapon; these make them particularly suitable for employment with cavalry.

In discussing the use of the machine guns, certain principles laid down in the employment of Cavalry, should be kept in mind, viz:

1. Cavalry's mobile armament may secure the power of movement by diminishing enemy fire.
2. The proper employment of fire power will always aid the success of mounted combat.
3. Rapid movement and fire usually go together.
4. Mounted and dismounted action should be supported by fire power whenever necessary.
5. The characteristic action of cavalry is rapid mounted movement supported by effective and intense fire.

From these principles it is seen that machine guns must and do fulfill certain requirements, viz: mobility, rapidity in going in and out of action, flexibility of fire, ease of control, sustained intense fire power of great volume, all around traverse, and direct as well as indirect fire.

Employment of Machine Guns

LT. WILLIAM P. CAMPBELL
7th Cavalry

10 Years Ago

Warfare has been and always will be a conflict between the offensive and the defensive. New inventions will often instill fresh power into the one or the other form of action. The offense always seeks to destroy the power of the defense, and in order to do so, naturally must possess greater power—whether in cannon, maneuverability or leadership.

The great masters of war have invariably applied correct principles in their successful operations, and these principles are the same whether applied by Hannibal, Alexander or Napoleon. An analysis of Napoleonic campaigns will reveal frequently recurring patterns that laid the cornerstone to success. First, there was usually a rapid and secret concentration. This almost invariable preliminary was often followed by the favorite Napoleonic maneuver from a central position designed to defeat opponents in detail. On the other hand, by means of rapid, secret marches, Napoleon would at times reverse the front by placing the bulk of his forces astride the enemy line of communication. He would then follow these strategic maneuvers by launching the tactical battle.

In either of these maneuvers, rapidity or mobility was the essence or key to success. Napoleon's first objective was to place his armies in a strategically advantageous position from which he could apply his superiority in leadership, weapons and morale in the tactical battle or battles to follow. The strategic stage set, the tactical battle was considered merely as a means to accomplish the final strategic victory. The speed or mobility which was so essential to Napoleonic maneuver was made possible by highly seasoned infantry and the mass employment of cavalry.

The Role of the Tank in the War of Today

BRIG. GEN. EDWIN E. SCHWIEN

A TANKER'S APPROACH TO AN INFANTRY PROBLEM

GROUND MOUNTED LIGHT MACHINE GUNS

by CAPTAIN NORMAN F. PRIEST

SINCE the day Colonel S. L. A. Marshall's book, *Men Against Fire*, was put on sale, there has been a constant struggle to strike a happy medium on the issue of accurate, aimed, small arms fire versus a volume of area fire. Both sides of the issue are equally important and it is not the intent of the writer to say or imply that one outweighs the other. However, the writer does intend to show that the accuracy of the ground mounted light machine gun can be greatly improved. Considering the fact that infantry defense lines are built around its machine guns, it then becomes imperative that we receive the utmost in accuracy as well as good area fire from these weapons.

Area fire can be achieved by employing sound tactics with proper command and discipline, but accurate fire depends on know-how and perfected mechanics—it cannot be commanded.

Before going any further with this article it might be well to explain that the mass training of replacements, as presently conducted, causes one to stop and scrutinize very closely, small

details that are quite often overlooked in a regular tactical unit. When the same small problems are faced day in and day out, they soon reach a stature out of proportion to their actual importance. Such is the case of the light machine gun. It is a superior, versatile weapon that has spoken well for itself in three wars. However, we cannot always rest on our laurels, but must constantly be seeking improvement, not only in ourselves, but in our weapons and all the tools of our profession. This is the story of one of those small training problems and a recommended solution.

The problem of light machine gun accuracy first came to this tanker's attention when it was noted that very few of the trainees were shooting a qualifying score on the light machine gun transition course. Why? The instruction was sound; the range was run according to the book; and the desire to do a good job was uppermost in the mind of each individual concerned.

Finally, on a routine walk down the firing line it was discovered that about 50% of the front sights had vibrated loose, which meant that these guns were no longer zeroed. That's simple. Tell the assistant instructors each to carry a screw driver and keep the front sights tight. No, that isn't the answer because they only vibrate loose again. What provisions are you going

to make on a transition range to zero every gun each time this mechanical failure occurs? There seems to be no ready, practical solution to this problem except to watch every tracer carefully and hope the proper amount of "Kentucky Windage" is applied to move the succeeding ball rounds into the target.

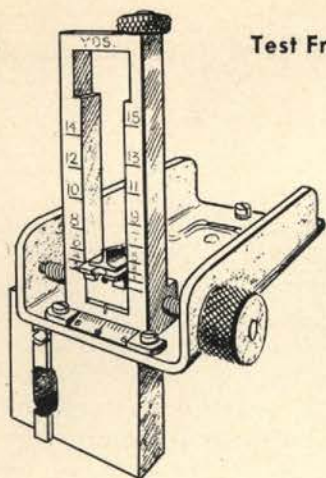
Let us analyze the front sight and see what brings on all of this trouble. Right away we see that its engineering is not as mechanically sound as possible because its vertical adjustment depends on a friction screw through a slot type hole. The lateral adjustment depends on a friction wedge held in place by another screw. With further study we note that the heads of both screws are susceptible to damage by any improper tool.

Why is it necessary to put up with a sight that is not as superior as the gun it aims? There must be a better way to manufacture a front sight. This problem does not exist on the tank machine gun because the gunner has two simple little click-type adjusting knobs with which he adjusts the telescopic sight when he zeroes. He does not have to depend on an assistant with a screw driver and can easily adjust his sight any time he feels that it needs attention.

For years the American small arms have had excellent, sturdy, well-engineered, click-type rear sights. The

CAPTAIN NORMAN F. PRIEST served as a mechanized cavalry unit commander in the European and Pacific theaters during World War II. He is presently assigned to the G3 section, First Armored Division, Fort Hood, Texas.

Figure 1
Test Front Sight for Browning Machine Guns
Cal. .30, M1919A4 and A-6



Standard Front Sight Blade
(Modified as Shown)



Standard Front Sight Bracket Body
(Modified as Shown)

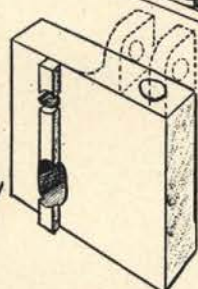


Figure 2
Standard Browning Automatic Rifle
Rear Sight Assembly

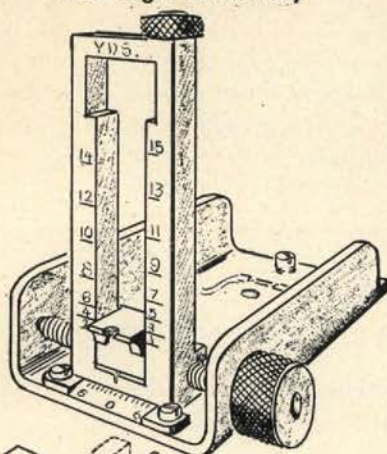


Figure 3
Mounted Position of Modified Front Sight

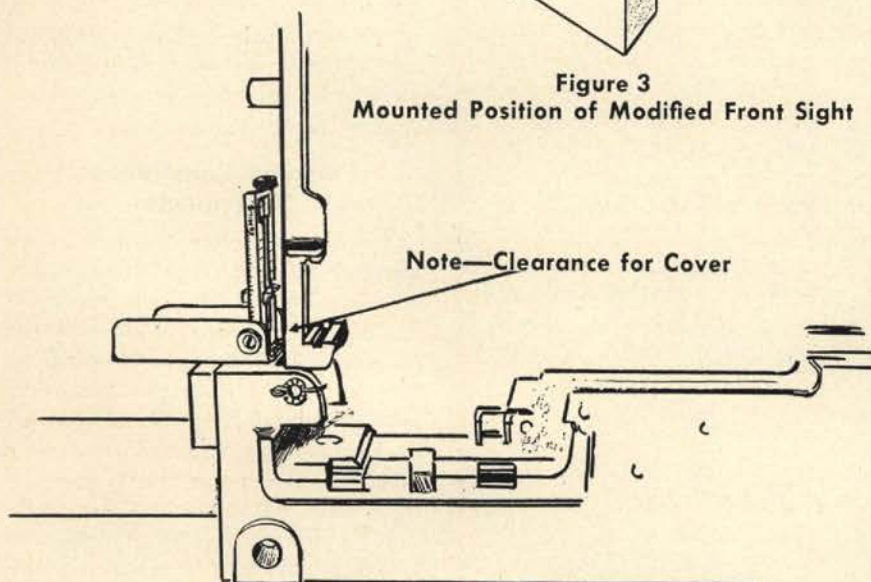


Figure 4—Front Sight Manipulation while Zeroing
ARMOR—November-December, 1953

ballistics of our ammunition have been worked out to the *Nth* degree and incorporated into the range scales of our small arms rear sights. However, what good is all of this if the front sight is not compatible?

So much for the theoretical side. A simple workable answer has been made, tested, and proven here in Combat Command "B" of the 1st Armored Division. The idea is to combine the Browning Automatic Rifle rear sight and mount with the light machine gun front sight (See Figures 1, 2, and 3). This combination makes a modified front sight that needs no screw driver to adjust it once it has been firmly mounted. The vibrating problem no longer exists. Better still, the gunner can adjust his front sight without the help of any assistant (See Figure 4) and know his zero to be accurate.

Now the range scale on the rear sight begins to take meaning and gives the gunner reasonable confidence that when he sets a given range on his rear sight, he is going to actually shoot that range.

But, alas, you say this clumsy modification is too big and bulky to be practical and juts out in front of the receiver just as though it had a sign on it—"Please knock me off." This is all true, but the idea is there, and it does work. There is no reason why this idea cannot be built into a front sight that is no larger than the present one, and then we will have something.

Very recently, Ordnance has made a start in the right direction by coming out with a sight that has a screw type elevation adjustment, but no lateral adjustment. This is not the answer because it still requires a second man with a screw driver and further requires lateral zero adjustments to be made on the windage knob of the rear sight. There is a difference between lateral adjustment for zero and windage adjustment for wind. One belongs on the front sight and the other on the rear sight.

If the title of this article has led the Infantry readers to believe that the writer, being a tanker, is out of order, please remember that we too sometimes fight dismounted. But the main point is that in this day of combined arms teams, our problems are mutual.

ARMOR ASSOCIATION NOTES

Council Meeting

On the second of October, 1953, a meeting of the Executive Council of the United States Armor Association was called by the President, Lieutenant General Willis D. Crittenberger. The purpose of this meeting was to firm up plans for the annual meeting to be held in January, 1954.

Annual Meeting

The annual meeting is scheduled to be held at The Armored Center, Fort Knox, Kentucky, on Friday, January 29, 1954. General Matthew B. Ridgway, Chief of Staff of the Army, has been invited to be the principal speaker. It is sincerely hoped that a maximum number of our membership

will be able to participate in this gala affair. This will be the third consecutive year that the annual meeting will have been held at Knox. Two years ago we were privileged to have Army Chief of Staff, General J. Lawton Collins, present the major address. In 1953, General Jacob L. Devers was the feature speaker. Due to the probable attendance of our new Chief of Staff, and he has expressed his hopes that he will be able to be present, increased membership, and the central location for the meeting, it is anticipated that this year's attendance will be greater than ever. Notices of the meeting have been mailed to all members.

PROGRAM OF EVENTS FOR THE ANNUAL MEETING

The program of events for the annual meeting to be held at Fort Knox on the 29th of January is arranged tentatively as follows:

Time	Place	Event
0800	Headquarters Building, The Armored Center	Honors for all visiting general officers
0820	Theater No. 1	Address of welcome by Maj. Gen. J. H. Collier, CG, The Armored Center
0830	Theater No. 1	Address by Lt. Gen. F. L. Parks, CG, Second Army
0845	Theater No. 1	Official opening of Conference by Lt. Gen. W. D. Crittenberger
0850	Theater No. 1	Initial address by Maj. Gen. E. N. Harmon
0910	Theater No. 1	Association business meeting conducted by Lt. Gen. Crittenberger, assisted by the Secretary
1000	Main Lounge, Brick Club	Break
1030	Theater No. 1	Continuation of meeting
1215	Country Club	Luncheon
1345	Dorret's Run	Demonstration: Armor in the Attack
1515	Sadowski Field House	Principal address by the Army Chief of Staff, Gen. M. B. Ridgway
1615	Theater No. 1	Official closing of the conference by Lt. Gen. Crittenberger
1645	Theater No. 1	Meeting of the newly elected council
1900	Brick Club	Reception and Dinner

Nominating Committee

The President appointed three members of the Council on the nominating committee. This committee is comprised of a member from each component, Regular Army, National Guard, and Reserve. They were directed to prepare a slate of proposed candidates for the governing body for 1954 to be presented to the membership at the annual meeting.

Proposed Constitutional Amendments

There being ten or more active members of the Association present at this called meeting, the Secretary-Treasurer was directed to poll the membership in view of amending the constitution. The proposed changes were covered in the notices forwarded to all members wherein they were asked to vote upon the changes if they were not attending the forthcoming annual meeting. The reasons for these changes are covered editorially elsewhere in these pages.

The first change involves broadening of the membership provisions to include all present or former officers and warrant officers of all services (i.e., Army, Navy, Air Force, Marine Corps) as active members, and all present or former enlisted men as associate members. This includes officers and warrant officers and enlisted men of either regular or civilian components. To accomplish this change, the following paragraphs of the con-

stitution have to be amended accordingly. Amend paragraphs 2a and 2b of Article IV from:

2. The qualifications for membership are as follows:

a. Active members: All general officers of the Regular Army or Army of the United States; and all officers and warrant officers assigned to, detailed in, or serving with Armor shall be eligible. Excepting general officers, any change in official status from any one of the above described conditions will serve to terminate Active membership on the last day of the calendar month within which the change has occurred, and the individual concerned shall assume the status of Associate member.

b. Associate members: Those transferred from Active membership and all other present and former commissioned officers, warrant officers and non-commissioned officers of honorable record in the military, naval or air service, shall be eligible.

to:

2. The qualifications for membership are as follows:

a. Active Members: All present and former commissioned and warrant officers of honorable record in the Army, Navy, Marine Corps and Air Force of the United States shall be eligible. This includes officers of either regular or civilian components.

b. Associate Members: All present and former enlisted personnel of honorable record in the Army, Navy, Marine Corps and Air Force of the United States shall be eligible. This includes members of either regular or civilian components.

It should be noted that this does not alter the other two classifications of members which are: Honorary and Junior members.

The second amendment to the constitution increases the number of elected members of the Executive Council from twelve (12) to eighteen (18) persons. To accomplish this, the following amendments must be made to the constitution:

Change paragraphs 1, 2, and 3 of

Article V from twelve (12) elected members to eighteen (18). The necessary changes are italicized:

1. The officers of the Association shall be as follows: President, First, Second and Third Vice-President, Secretary-Treasurer, Editor and *eighteen (18)* elected members of the Executive Council.

2. The President, the three Vice-Presidents, and the *eighteen (18)* elected members of the Executive Council shall be elected by secret written ballot at the annual meeting of the Association. A plurality of the votes

cast shall be requisite for election.

3. The Executive Council which initially shall consist of the President, the three Vice-Presidents and *eighteen (18)* elected members shall appoint the Secretary-Treasurer and the Editor before the close of the month in which the annual meeting is held. Upon appointment, the Secretary-Treasurer and the Editor shall become members of the Executive Council.

Both of these proposed changes will be acted upon at the annual meeting in January.

MEMBERSHIP DRIVE

As we approach the end of the year and the annual meeting, we believe that it is time to institute a sustained membership drive. Letters have already been dispatched to the chairmen of the overseas advisory boards. One Armored Unit, a National Guard organization, has initiated an intensive drive to apprise all armor officers of the professional benefit to be derived from their membership in this Association. Letters have gone to most stateside Armor commanders asking their support in this effort.

We believe that commencing with this issue all Armor officers will not want to miss any of the articles by Brigadier General Hamilton H. Howze on the training of an Armored Division. This series of articles as a supplement to official publications should prove most helpful to any commander more especially armored unit commanders.

It is also suggested that you check the status of your own membership in order that you might be eligible to attend the annual meeting.

Memberships have shown a steady increase all year but the gap between the number of Armored officers on active duty and the number who are members of the Association is still too large.

This does not take into account the National Guardsman or Reservist, but we feel that their interest in the art of mobile warfare can be increased through membership.

As stated many times before, all profits are returned to the magazine; hence the larger the membership the better the end product—a larger and better magazine. During the past year we achieved a goal of a minimum of 64 pages per issue, and on one occasion published 80 pages. We would like to move up to a minimum of 80 pages, but this would require a larger circulation than we have at present.

ROTATION of ASSIGNMENTS

WHAT is the peacetime mission of the Army? To prepare for war. All things being equal, it is the commanders and officers on the battlefield who win or lose the battle. It is imperative that during peacetime the Army train and develop an officer corps that is qualified and prepared to serve effectively in any emergency under any conditions. The best and most effective means of doing this is by rotation of assignments.

Generally speaking, rotation of assignments is the responsibility of the Career Management Division, The Adjutant General's Office, and the commanders in the field. This Division assigns officers and provides opportunity for schooling; however, Career Management cannot alone develop a proficient officer corps. The overall degree of success attained in developing the abilities of the officer corps of the Army, depends primarily on the initiative, willingness and ability of commanders to effect rotation of duties for their officers.

The complex Army of today has many fields open for an officer who desires to specialize; however, it must be remembered that any officer of the Combat Arms is basically and fundamentally a fighting man. For this

reason, branch material assignments should continue until an officer has completed the branch advanced course and is fully branch qualified. However, in certain individual cases upon completion of three years service, officers may enter certain specialization programs. After an officer indicates a desire to specialize, he may expect at least one full tour in the selected field in order that the Army may extract full value from its investment. Additional tours may be dictated by requirements. Where possible, assignments to specialized duties are interspaced with branch assignments so that the officer will remain fully branch qualified.

The molding of the future high level commander and staff officer begins the day an officer is commissioned. Career Management assigns the newly commissioned lieutenant to the appropriate branch school for basic training in his branch. Upon graduation, he is assigned to troop duty for the first few years of his service; it is during this period that the commander has great responsibility for indoctrination in the duties attendant to troops, command, supply, vehicular maintenance, teaching and the many other additional duties that go with troop assignments.

Career Management controls the assignment of officers upon their graduation from the branch advanced course. Consistent with military needs, an officer upon graduation can expect to be assigned to one of four broad fields, additional troop duty, staff, civilian components or specialization.

The Directed and Recommended MOS, one of the most effective tools of Career Management, was suspended shortly after the outbreak of the Korean conflict. If either or both are reinstated the net result will be more officers qualified to serve in more fields.

Career Management, following closely the officer's development, determines the type of assignment that will meet requirements of the Army and will be most beneficial to the officer.

An officer who has not attained full benefit from his previous troop duty, either due to poor local assignments or unfortunate circumstances may be re-assigned for additional troop duty in order to become fully branch qualified. Then again there may be an urgent requirement for experienced troop officers in some particular unit.

Generally, an officer upon completion of the branch advanced course



*"The rotation of officers for their individual development is possible under almost all conditions. In general, the rotation improves the organization to which officers are assigned, for the work performed is by men with greater perspective. * * * Career Management with cooperation of the commanders can prepare an officer in peacetime for his wartime mission."*

—MAJ. GEN. J. C. FRY, Chief, CMD.

has obtained the necessary schooling and experience to qualify him for staff or civilian component duty. To the staff, the officer brings his knowledge of troops, their problems and their viewpoint. From the staff he learns the planning, coordination, and the operations necessary in a higher command for the successful employment of troops on the battlefield. To the civilian component he brings his background and knowledge of the professional soldier and imparts this knowledge in the training of our citizen soldiers.

The ensuing years to the grade of lieutenant colonel are served in any combination of the foregoing fields. Successive tours on the staff should not be in the same staff activity. Commanders at all echelons should feel the responsibility for developing versatile officers. Continuous effort should be made to assign officers to allied duties such as placing the officer with a supply background in G3 and the personnel man in G4. It is the duty of all of us who are responsible for assignments to avoid too frequent repetition of a type of staff duty.

Command positions are relatively few at the battalion level and an officer may have to wait several years for

the opportunity to lead troops. He should have this opportunity, and the earlier the better. It is here again that the divisional and large installation commanders can do much in assisting Career Management Division in giv-

IN THE NEXT ISSUE:

SELECTION FOR FOREIGN SERVICE

ing an officer the type duty necessary in his career.

The importance of rotative assignments lessens considerably for an officer who has attained the grade of colonel, provided his earlier years have been monitored properly. At this stage of his career, the able officer will be qualified to perform well in many

different fields. There are, however, a few young colonels who due to the world situation have not had the proper rotation of assignments in the past. Take Colonel "A" for example. Colonel "A" is an outstanding officer. During his earlier years he had many various duties up to the grade of captain. At the outbreak of World War II Colonel "A" was on staff duty. Because he was an outstanding officer and commanders desired his experience, he remained on the staff. Although Colonel "A" has had a well rounded career as a staff officer, he needs command duty as soon as possible. Career Management, with the assistance of the commanders in the field, will give Colonel "A" the duty he needs to round out his career.

The principles of rotative assignment applied with common sense will avoid the two major pitfalls which confront us, the production of the professional staff man and the perennial commander.

Career Management strives daily to build a background for each officer which will permit him in time of war to overcome any emergency or obstacle that confronts him. It is the responsibility of each commander to assist in the task of building a highly trained officer corps.



The Revolution: American Military Policy Emerges from the Crucible of War*

by C. J. BERNARDO, Ph.D. and EUGENE H. BACON, Ph.D.

The Navy Solves Some Problems

Early in the war, it was generally recognized that a navy, regardless of size, was an indispensable item in the conduct of successful operations. In fact, during the first three years, most of the powder, ammunition, and guns that were used against the British were captured from them by the unorthodox navy that sprang into existence almost from the very first shot.³⁵ And, while it was not a strong fleet, the faulty administration of the British Admiralty occasioned by a corrupt officialdom, seriously crippled the efficiency of the Royal Navy.³⁶ Even more than this, perhaps, Americans were favored with the advantage of an intimate knowledge of their coast line, harbors, and navigable rivers where light craft could easily put in to lie hidden. These neglected lessons in geography were to prove costly for Britain

throughout the course of the War.

In these circumstances, British admirals moved only with the greatest of caution, allowing the Americans plentiful opportunities to exploit their advantages. Unhindered by the enemy, and unfettered by official corruption, the American Navy depicted a vivid contrast by the vigor of its leaders and by June, 1775, could boast of a superiority on Lake Champlain.³⁷

By the summer of 1775, every State had legalized its own navy.³⁸ On September 2, Washington, acting on his own initiative, created the American Navy by placing a section of the Army on shipboard with the commission to cruise and seize ships of the Ministerial Navy, to or from Boston, laden with soldiers, arms, ammunition, or provisions.³⁹ The success which attended this experiment pointed the way for additional commissions from Congress to private individuals as well as State authorities thereby placing upon the sea lanes a formidable fleet of privateers.⁴⁰

But the difficulties which beset the Army also posed great problems for

the Navy. Each State entered into a spirited competition to fit out ships of every description from square-rigged brigantines to topsail schooners and small boats carrying armament as varied as the number of men who manned them. Privateering, like service in the militia, had a great appeal because of the allurements of increased pay and prizes; but unlike the militia, term of service was not limited to short periods. But while men were plentiful for this service, the Navy went begging for recruits to fill the ships' complements.⁴¹

The stimulus for a stronger Navy, like that for a strong Army in 1775, came from New England. After several petitions from that section, Congress on November 2, 1775 *Resolved* to build, at Continental expense, a fleet of four armed vessels "for the protection of these colonies. . . ."⁴² This was followed on November 28 by the publication of a set of regulations⁴³ to govern the new Navy in the same manner as the Articles of War, laid down by Congress in June, governed the Army.⁴⁴

If the patriots could not build a

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fleet strong enough to check the Royal Navy, they could bring to bear what little they had with telling effect; and if George III and his ministers needed proof of this they had not very long to wait. The value of the small but dauntless American Navy and its contribution to the final outcome would be difficult to determine. But certain it is that without its services vital supplies would not have been obtained; and, the British inability or incapacity to cope with these wasps and hornets of the sea, paved the way for the French and Spanish intervention. From the former, America received direct and tangible aid in men, arms, and ships; from the latter, the utility of dispersing British sea power from the Mediterranean to the Caribbean.⁴⁵ From 1780 on, the pressing need for a strong navy ceased to be a major problem for the Congress. The counterpoise to British maritime supremacy had been established with the Franco-American Alliance.⁴⁶ Unfortunately the same happy circumstance did not visit the Army and Washington's difficulties multiplied as time wore on.

Enlisting and Training the Army

The story of remodeling and enlisting the Army is a drama depicting the almost superhuman efforts of Washington to cope with the multitude of difficulties which beset him from every quarter in and out of Congress and in and out of the Army.⁴⁷ In a letter to the President of Congress on November 11, 1775, while complaining of the selfish motives exhibited by some of his officers, he described the situation. The personal motive, he was sure, added to the problem of fixing the organization of regiments, especially when manifested even by soldiers who would not "enlist until they know their colonel, lieutenant-colonel, Major, and Captain, so that it was necessary to fix the officers the first thing. . . ."⁴⁸ Eight days later it had become crystal clear that the men as well as the officers would not reenlist for patriotic reasons alone; and, if the Army was to be kept at some respectable strength, it was necessary to provide a stimulus "besides love of Country, to make men fond of the service."⁴⁹ The wisdom of these recommendations was borne

out by the returns that came in, which, by December 16, were computed at less than 6,000 men, or some 4,000 less than Washington estimated would be needed for defensive purposes.⁵⁰

But added inducements to enlist were viewed with mixed feelings in New England and in the Southern colonies. Although Washington now inclined to the side of a bounty for the men as well as officers, sharp differences of opinion were voiced throughout the country. General Nathanael Greene was sure the payment of a bounty would make it possible to pick the best men, fill up the Army, and keep "a proper discipline . . . and good order and Government in the camp. . . ."⁵¹ John Adams argued just as strongly against the payment of a bonus which he thought would only impose new hardships upon the New England colonies;⁵² and Congress were in no mood to grant any bounty, going so far as to voice disapproval of those already provided by Rhode Island.⁵³ But this was December 6, 1775; the Army had not yet disintegrated.

Toward the end of that month, when the men began to quit their posts, Congress veered toward the viewpoint expressed by General Greene, and by January 19, 1776, each State was advised to encourage enlistments by the grant of a bounty of \$6 $\frac{2}{3}$ to any man who appeared properly clothed and armed for service; and \$4 to those men enlisting without such arms and accoutrements.⁵⁴ By the 26th of June, Congress had resolved to offer a bounty of \$10 to each man who would enlist to serve for three years; and on September 16, in reorganizing the Army, the bounty was raised to \$20 for short term enlistees. To those who agreed to serve for the duration of the war (and there were few) an additional gift of 100 acres of land was offered;⁵⁵ and one month later an annual bounty of \$20 was promised to every non-commissioned officer and private enlisting for the duration.⁵⁶

Left to itself, the operation of the bounty system by Congress alone, might have produced the desired effect. But with each State engaging to fill their quotas by the grant of similar bounties, and in some cases increasing the amount, it was diffi-

cult to secure men for the Continental Army not only for the duration but also for shorter periods. In many instances this competition rendered it impossible to enlist men for longer than three months at a time. In 1777, Maryland offered a bounty of \$40 above that of the continental bounty "to each able bodied recruit who shall enlist for three years, unless sooner discharged, also a pair of shoes and stockings to be furnished them and each at a reasonable rate."⁵⁷ Bounties were also offered to recruiting officers and any others "who may take up and secure deserters from the continental army in this state [Maryland], agreeable to the resolves of Congress."⁵⁸ This method of recruiting was inevitable in a system dependent upon volunteer enlistments, and it placed the Government in the position of suppliant. For when patriotism and popular enthusiasm no longer suffice to fill the ranks, resort must be had to the practice of financial grants.

All the best intentions of Congress and the States notwithstanding, the bounty system failed to bring much relief to the advocates of a long term army, and induced men rather to seek shorter service with the same promise of a bonus which could be repeated over and over again. And, in spite of these experiences, this practice was followed in succeeding wars with little regard for the enormous cost of such procedure. But what else could be done when National Defense was looked upon with suspicion by lawmakers who felt it to be their peculiar calling to safeguard American liberties by beating down the recommendations made by the Army even for defensive purposes? It may not even be amiss to conclude that Congress, during the 19th Century, would provide for the National Defense in time of War by the payment of tribute, for in essence the bounty constituted a tribute. It was accepted as a necessary evil because the Government failed to take adequate measures to define a proper military posture dictated by the needs of the nation in peace as well as war.

It was under these auspices that the Army was recruited during the winter of 1775, and kept together by the indomitable will of George Washington. It was this Army that drove General Howe out of Boston

in March, 1776, and when the account books were balanced out, the British "could not claim possession of an acre of ground in the provinces that had joined the revolt. To establish a bridgehead and conquer a hostile continent, this was now the task of the British army and navy."⁵⁹ It was a formidable task and the success which met the warriors of Empire attests not to their invincibility and prowess, but rather to the weakness of the American military system which suffered the torments of provincial jealousies, impotence, and lack of efficiently centralized control. But, during the first year, Americans still nourished the hope of eventual conciliation with England. After the dismissal of Howe from Boston this became an impossibility, for His Majesty's Government could ill afford to give her other dependencies a vivid object lesson in the proper procedure for achieving independence. Not only national honor, but also respect for recognized law and order were now at stake in the dangerous game of Empire which Britain was playing all over the world. This was the picture in the Spring of 1776, and Americans were clear-visioned enough to perceive the signs. It was independence or annihilation, and the patriots chose freedom. But independence was the goal not the method for a successful prosecution of the war. What was needed was one fountain head, not thirteen different spouts.

Independence Divided Thirteen Ways Spells New Weakness

Among the warmest advocates of American independence were the staunch supporters of the rights and sovereignty of the individual States. Samuel Adams refused to "subvert" the Revolution by creating a nation. This was a struggle, he thought, for liberty in which individual patriots shared equally, but patriotism "must always be partial to the particular States"; it was an ideal which began at home and never strayed far from one's immediate environment.⁶⁰ As a result, Independence was proclaimed on July 4, 1776, and almost a year later, a central governing body was created which followed closely the recommendations of Sam Adams. It was a Government which recognized the power of the sovereign

States and functioned only as a sort of league of nations. It could make war and peace, but it could not provide the sinews for carrying out the national policy.⁶¹ Without the authority to tax, no policy could be implemented; and what was executed was done so only with the benign affirmation of the States conducting their affairs as they pleased throughout the war with little regard for the problems which faced the Government.⁶²

Instead of uniting and pooling their resources against a common enemy, the States undertook to conduct their own private war with Great Britain and entered into a spirited competition among themselves and against Congress for war material and supplies of all kinds. They engaged in a struggle for survival. To them a strong army and navy at home gave strong assurances at least, that come what may, they could defend themselves without depending upon the others for aid. Each State, except one, boasted of its own navy, with its own admiralty board acting in accord with sovereignty. Whatever aid was rendered to the Continental Army was done in such a niggardly fashion that was both dangerous and unwise.

Under these circumstances, the Continental Army came to take on the appearance of separate armies or "lines," notwithstanding the fact that all were under the command of general officers appointed by the Congress. All vestiges of nationalism or national unity began to wear away. In time, even the controlling influence of the officers was dissipated by the appointments made by the States of all line officers below the grade of Brigadier General. In 1778, Congress itself struck a blow for the States by directing them to provide ammunition, arms, and clothing to their own line in the Continental Army, thereby yielding to the States the very powers which made the Army truly national.

But this was not all. While the Government sought financial and material aid in the Courts of Europe (without which success could be discounted at a low premium), the States entered into separate negotiations for this aid through their special agents. At the Court of France, Vergennes preferred to strengthen the hand of

the Central Government of the United States in playing his game of *Realpolitik*, and in this regard at least, the States ran second best.⁶³

The Martial Spirit Needs a Little Coaxing

The anxiety displayed in 1775 by the States to call upon a central authority to supervise the military operations, had, by early 1776, sharply subsided. The British were driven out of American territory and the prospect of defeat was not seriously contemplated by the patriot leaders. But when this feeling of complacency was suddenly displaced by the reappearance of British troops in the United States, Americans were constrained to readjust their thinking. The Declaration of Independence had rendered it necessary to erect a system of government embracing the thirteen States. But this Government was at best a nominal entity exercising those functions designed by the separate States. Lacking the necessary power vital even to a nation at peace, the Congress struggled to conduct a first class war against a first class power. Powerless to do anything more, this body tried to solve the problem of a perennial dissolution of the Army by the adoption of temporary expedients to meet each emergency.

Not long after the Declaration of Independence, which in itself was an avowal of free men to fight or die for the preservation of liberty, it became apparent that if the Continental Army was to increase at all, some measure of encouragement was necessary for inducing men to accept the call of service beyond that which was expected of the militia. In a dual system of military service where the option of lesser periods of enlistment is offered, men instinctively prefer the option, especially when the term of the other is extended from one to two and three years. How then induce men to serve for long periods?

By the Summer of 1776, despite the frank protestations of independence and glib avowals of patriotism, this dual system showed only a small increase in the Continental Army, and Washington was forced to call the attention of Congress to the inevitable release of the greater part of his army by the 31st of December. Decrying the reliability of militia

troops when pitted against superior numbers of veteran troops, he made an eloquent plea for a standing army which could be relied upon for the duration. The defense of American liberties at this critical period, he was sure, "must of necessity be greatly hazarded, if not entirely lost, if their defence is left to any but a permanent standing Army; I mean one to exist during the War."⁶⁴ To accomplish this, he went on, would be difficult if attempted merely by an inducement of a bounty, but the addition of land "might have a considerable influence on a permanent establishment."⁶⁵

An army such as this, comprising from 50,000 to 100,000 men, would not only assure victory, but also would be less expensive to maintain in terms of bounties and land grants. Washington would solve this problem by offering good pay or equivalent pay to that tendered British officers, for the execution of similar responsibilities. This would "induce Gentlemen and Men of Character to engage"; men who "are actuated by principles of honor and a spirit of enterprise," and, with more regard for the character of such men than for "the Number of Men they can Enlist, we should in a little time have an Army able to cope" with any that could be opposed to it.⁶⁶

Moreover, a sizeable standing force would put an end to the horrifying experience of witnessing the dissolution of the Army in the face of the enemy, and would also settle the problem of training created by the appearance of raw recruits at frequent intervals. To acquaint men with their military duties and to bring them to an understanding of discipline and subordination was not only time consuming, but a work of great difficulty. In the Army of 1775, these problems were compounded by an almost complete absence of distinction between officers and enlisted men. This could only be corrected for the future, observed Washington, by engaging men for the duration even at the expense of a bounty of \$30 or more. Not that this was a reasonable assurance of securing the services of the men needed, but something had to be done immediately, for "it will never do to let the matter alone as it was last year, till the time of service was near expiring."⁶⁷

But Congress reacted slowly to Washington's repeated warnings, and on June 26, 1776, voted a bounty of \$10 for every non-commissioned officer and soldier who would enlist, not for the war, but for three years. Two weeks earlier, a Board of War and Ordnance was created to carry out the responsibilities of a War Department;⁶⁸ a necessary reform but of small relief to Washington who required more men. The question was not what shall Congress do, but what can Congress do?

Acting within the limited authority ascribed to them, the Congress tried desperately to follow Washington's recommendations for an adequate force. After many weeks of study and debate, they brought themselves to face the reality of the situation and on September 16, provided for an army of 88 battalions to be prorated among the States.⁶⁹ The term of service was left to the discretion of the States but was fixed at three years or the duration of the war. Those who chose the former received a bounty of \$20 and for the latter an additional 100 acres of land.⁷⁰ Within three weeks Washington again warned Congress that the Army was "on the eve of its political dissolution" notwithstanding this legislation. Furthermore, there was a vast difference between voting battalions and raising men, and unless the pay of officers, especially the field officers, was increased, even those worth retaining "will leave the Service at the expiration of the present term. . . ."⁷¹

Meanwhile Congress sought to fill the 88 battalions by authorizing the States to enlist men for three years while softly hinting that enlistments for the duration would be preferable. But the season was getting late, and it was apparent that the full quota of men for the new establishment would not be reached by the end of the year. Fully aware of this condition, Washington urged Congress to increase the number of battalions to 110. This would provide a larger number of officers and although he admitted the impossibility of recruiting a full complement for the original number, the officers of 110 battalions could recruit more men than those of the 88.⁷² What was important at this late date was not the size of the establishment, but rather the number of men that could be brought

in to fill the void soon to be created by departing soldiers.

In spite of all the entreaties and sundry schemes for enlisting larger numbers for the duration of the war, comparatively few men succumbed to the increased inducements offered by the Congress. Not that the men were wanting in patriotism, but left to their own devices, and with the individual States offering to "up the ante" for shorter periods of service, the men naturally leaned away from federal service. The decision of Congress to accept three year enlistments with the offer of a bounty of \$20 minus land was prompted by the policy of the States which offered higher bounties for shorter periods of service. In the competition which ensued, Congress ran second best.

The Menacing Shadow of a Weak Executive

Among the many trials and tribulations that were in evidence during the year 1776, none was more serious or more evident than the inability of Congress to cope with the new and urgent executive questions which daily came to their attention. This was more embarrassing to Washington who had to refer constantly to them for authority only to find that their power to grant it was reduced almost to a cipher because of the serious differences of opinion which had arisen on every important question. Nothing but a catastrophe, it seemed, would bring the delegates to a proper appreciation of the dangers confronting the country.

However, Congress merely reflected the general attitude of the country at large. When it became evident that this war was to be waged in earnest, and under some authority where the effort was to be shared by all, the patriotic fever of '75 approached normal in '76, and for the remainder of the war, suspicions of executive power ran high in and out of Congress.

For this reason the later Congresses were less able than the earlier ones. Coupled with this feeling was the degeneracy of the position of delegate into something like a purgatory. Election to that body often meant much labor and great inconvenience which brought little honor or profit. Service in the State governments, on the other hand, afforded

special opportunities for usefulness and distinction together with profit. The time was to come when even the position of President of Congress went begging. Complaining of the low regard in which the positions in Congress were held, President Laurens warned: "A most shameful deficiency in this branch is the greatest evil, and is indeed the source of almost all our evils. If there is not speedily a resurrection of able men, and of that virtue which I thought to be genuine in seventy five, we are gone. We shall undo ourselves."⁷³

Prompted by the personal motive and provincial jealousies, Congress threw in their lot with private interests to prevent the adoption of measures to create sufficient executive authority to give some substance and efficiency to the management of Army affairs. A War Department with extensive powers should have been immediately established. Instead, Congress retained the military administration in their hands, merely appointing committees for special purposes but granting them no authority to act. This meant they could only study the problems, and make reports, after which the Congress donned "heavy gloves" and engaged in long-winded debates while the Army stood in urgent need of men and supplies.

On January 24, 1776, a Committee was appointed to consider the subject of war office. After spending five precious months in study and debate, they adopted the plan for a Board of War and Ordnance to consist of five of their own number with a paid secretary.⁷⁴ In 1777, this was superseded by a new Board consisting of men who were not members of Congress, allowing membership to military men whose experience was necessary to bring some efficiency to the administration of military affairs. But still there remained the question of divided authority over these questions and finally, in 1781, when Congress became convinced of the advantage of a single headed Department, the Board was abolished and General Benjamin Lincoln was appointed Secretary at War.⁷⁵ If this belated decision had been made in 1776, there is a strong possibility that many of the problems encountered in raising, equipping, and training the troops for an energetic prosecution of the war might have been

eliminated, and Washington might have been spared many trying moments in keeping his army together.

By December, 1776, the Army was almost completely dissolved, legislation notwithstanding; and to make matters worse, British troops had swept through New Jersey on their way to Philadelphia, the capital of the United Colonies. Inspired by these tidings, Congress not only made

sary . . . to displace and appoint all officers under the rank of brigadier general, and to fill up the vacancies in every other department in the American armies; to take, wherever he may be, whatever he may want for the use of the army; and if the inhabitants will not sell it, allowing reasonable price for the same; to arrest and confine persons who refuse to take the continental currency. . . .⁷⁶

Fearful that such a sweeping grant of authority might be misinterpreted by the individual States, Congress on the same day named a Committee to prepare a paper explaining "the reasons which induced Congress to enlarge the Powers" of the Commander-in-chief.⁷⁷

Washington was not altogether unprepared for this extension of power, for on December 20th he argued that a commander situated at such a great distance from the seat of government⁷⁸ must have some measure of discretion; and perhaps also he was somewhat aware of General Greene's letter of the 21st to Congress along these lines.⁷⁹ However grateful he might have been at this sudden windfall, Washington never let himself forget that he was the servant of a civil authority and the army under him an instrument for safeguarding civil liberties. Instead of thinking himself freed from all civil obligations by this mark of confidence, he assured his friends: "I shall constantly bear in mind, that as the Sword was the last Resort for the preservation of our Liberties, so it ought to be the first thing laid aside when those Liberties are firmly established."⁸⁰



a vigorous effort to increase the size of the Army, but also vested Washington with extraordinary powers to bring this about. Compelled by that stern and retributive General Necessity, they had been forced to approve that which in any other circumstance they would have shunned as the plague. Placing reliance upon the wisdom and character of the Commanding General, they Resolved to grant him full and complete power

to raise and collect together, in the most speedy and effectual manner, from any or all of these United States, sixteen battalions of infantry, in addition to those already voted by Congress . . . to apply to any of the states for such aid of the militia as he shall judge neces-

⁷³Freeman, *op. cit.*, Vol. 4, p. 70. See also Samuel E. Morison, *The Maritime History of Massachusetts, 1783-1860*, Boston, Houghton, Mifflin Co., 1941, p. 29.

⁷⁴French, *op. cit.*, p. 346.

⁷⁵Alfred Thayer Mahan, *The Major Operations of the Navies in the War of Independence*, London, Sampson Low, Marston & Co., Ltd., 1913, p. 16. American naval superiority in the Northern theater was even admitted a year later by a London newspaper in an article dated September 26, 1776. Quoted in *ibid.* This domination of Lake Champlain was an important factor in the failure of the British to capture Ticonderoga in 1775, which if in enemy hands in 1776 might have paved the way for a quick and disastrous end of the war. For a vivid description of Washington's ability in naval affairs see Dudley W. Knox, *The Naval Genius of George Washington*, Boston, Houghton Mifflin Co., 1932.

⁸⁸See Rhode Island, *Minutes and Proceedings Upper House*, August Session 1775, August 26, 1775, Nos. 38, 46; Massachusetts Records of the General Court or Assembly, July Session 1775, January 11, 1776, p. 449; February 4, 1776, p. 539; April 23, 1776, p. 152.

⁸⁹Miller, *Triumph*, p. 79. Washington himself directed the operations of the land and sea forces of the United States. For a vivid description of Washington's ability in naval affairs see Dudley W. Knox, *The Naval Genius of George Washington*, Boston, Houghton, Mifflin Co., 1932.

⁹⁰French, *op. cit.*, p. 370. See also Lynn Montross, *Rag Tag and Bobtail*, New York, Harper & Bros., 1952, p. 85.

⁹¹Matthews and Wecter, *op. cit.*, pp. 27-38. For the exploits of the New England privateers in harassing the British, see Freeman, *op. cit.*, p. 70; Montross, *op. cit.*, p. 85.

⁹²Chauncey W. Ford (ed), *The Journals of the Continental Congress, 1774-1789*, Washington, Government Printing Office, 1906, Vol. 3, pp. 274, 316, 374-376. Hereafter cited as JCC. In effect these Resolves legalized privateering. On March 23, 1776, the clauses referring to legal prizes were redefined. See 4 JCC, 230-232.

⁹³3 JCC, 378-387.
⁹⁴2 JCC, 111. The rules for the Army were adopted on June 30, and enlarged on November 7, 1775. See also 3 JCC, 331-334.

⁹⁵Nicholas J. Spykman, *America's Strategy in World Politics*, New York, Harcourt Brace & Co., 1942, p. 66. See also Mahan, *op. cit.*, pp. 6-7.

⁹⁶The interjection of the French Fleet left American sea captains free to openly flout the maritime might of Britain even as close as the coast of Scotland. John Paul Jones in 1779, intercepted the Baltic fleet off that coast and captured two ships of the line. See Miller, *Triumph*, p. 172.

⁹⁷French, *op. cit.*, p. 503.

⁹⁸4 WW, 81-84.

⁹⁹Washington to President of Congress, November 19, 1775, *ibid.*, p. 101.

¹⁰⁰French, *op. cit.*, p. 523. This state of affairs was not contemplated by a Committee of Congress appointed to confer with Washington on September 29. After a brief study of the steps to be taken to provide an adequate military policy, they agreed that an army of 20,372 men could be raised with little difficulty, if not, Washington was to be given the power to call upon the militia of the neighboring States to fill the quotas.

But the Commander-in-chief was reluctant to call upon the local militia organizations which, he was sure, would provide more than 32,000 men by March, 1776. In order to eliminate the provincial variety of the regiments, the Committee fixed the number for each at 728 men, including officers.

¹⁰¹*Ibid.*, p. 517.

¹⁰²3 JCC, 393.

¹⁰³Emory Upton, *The Military Policy of the United States*, Washington, Government Printing Office, 1907, p. 7.

¹⁰⁴*Ibid.*, p. 21.

¹⁰⁵*Ibid.*

¹⁰⁶*Ibid.*, p. 22.

¹⁰⁷Maryland, House of Delegates, *Votes and Proceedings*, 1777, October Session, November 13, 1777, p. 12.

¹⁰⁸*Ibid.* However undesirable it may have been to induce men to serve by these methods, they were not as distasteful as the attempt to grant bounties to manufacturers for increasing the production of clothing. *Ibid.*

¹⁰⁹Miller, *op. cit.*, p. 87. See also Freeman, *op. cit.*, p. 64.

¹¹⁰Miller, *Triumph*, p. 426.

¹¹¹This was the Government under the Articles of Confederation. Although this plan of Government was not finally ratified by all the States until 1781, the only authority wielded by the Continental Congress was that permitted under this instrument.

¹¹²Some idea of the limited authority of Congress may be gleaned from the correspondence between that body and the various States. Instead of making firm demands, the Congress, in apologetic vein, informed the States that it would be necessary to rely upon the militia. "The Militia of the United Colonies are a body of troops that may be depended upon. To their virtue the Delegates in Congress now make the most solemn appeal." See Ltr Pres. of Congress to the Governments of New Hampshire, Massachusetts, Connecticut, New York, New Jersey, Delaware, and Maryland, June 4, 1776, in Peter Force (ed), *American Archives*, 4th Series, Washington, 1846, Vol. 6, pp. 707-708.

¹¹³For a clear picture of these episodes see Samuel F. Bemis, *The Diplomacy of the American Revolution*, New York, D. Appleton-Century Co., Inc., 1935, Chapters 3 and 4 *passim*.

¹¹⁴Washington to President of Congress, September 2, 1776, 6 WW, 5. It is significant to note that men like Emory Upton have interpreted Washington's critical attitude as showing an abhorrence of the militia. To be sure he made no excuse for

their behavior in such battles as Long Island; but it would be to misinterpret Washington to say that he had no faith in the militia system, especially when it is remembered that he expressed high words of praise for those who fought at Bunker Hill. Moreover, he never discounted the use of the militia to augment the regular force.

¹¹⁵*Ibid.*, p. 6.

¹¹⁶Ltr Washington to President of Congress, September 24, 1776, *ibid.*, pp. 108-110. Cf. Nathanael Greene to Governor Cooke, October 11, 1776, quoted in George Washington Greene, *The Life of Nathanael Greene*, New York, Hurd & Houghton, 1871, Vol 1, pp. 222-223. Greene blamed Congress for this condition, and blamed the officers for the actions of the militia.

¹¹⁷Washington to President of Congress, February 9, 1776, 4 WW, 318.

¹¹⁸This was created on June 12, 1776, and made up entirely of civilians, 5 JCC, 434-435. By the following year representation included military men. 9 JCC, 818-819.

¹¹⁹It should be noted that at this time the term battalion was used synonymously with the term regiment.

¹²⁰5 JCC, 762.

¹²¹Washington to President of Congress, October 4, 1776, 6 WW, 152-153. See also Greene, *op. cit.*, p. 222. On the 19th of September, 1776, General Greene warned that calling out large bodies of militia would be "destructive in the end," because the "resources of the country cannot support it."

¹²²Washington to President of Congress, December 20, 1776, 6 WW, 403.

¹²³Louis C. Hatch, *The Administration of the American Revolutionary Army*, New York, Longmans Green & Co., 1904, pp. 20-21.

¹²⁴This secretary was Richard Peters who remained either in that capacity or as a member during the five years of its existence.

¹²⁵7 JCC, 216.

¹²⁶Resolve of December 27, 1776, 6 JCC, 1045-1046. See also Freeman, *op. cit.*, pp. 336-337. This discretionary power was limited to a period of six months.

¹²⁷6 JCC, 1047, 1053.

¹²⁸Washington to President of Congress, December 20, 1776, 6 WW, 402.

¹²⁹Greene, *op. cit.*, pp. 290-291.

¹³⁰Washington to Robert Morris, George Clyman & George Walton, January 1, 1777, 6 WW, 464.

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THROUGH THE BOOK DEPARTMENT

NEWS NOTES

National Guard Units Get Latest Type Tanks

Latest type light tanks are being shipped to National Guard tank-equipped units in 32 States, the Department of the Army announced recently.

Shipments should be completed prior to summer field training next year. The new tanks will meet current requirements for this type weapon in the National Guard's Infantry divisions, armored cavalry regiments, and heavy tank battalions.

The M41 Walker Bulldog tanks, equipped with 76 millimeter guns, are of the same type now being delivered to active Army units. They will replace the National Guard's M24 tanks of World War II vintage.

"These tanks throw a heavier punch than the old M24's," said Major General Edgar C. Erickson, Chief of the National Guard Bureau. "Their delivery is part of the program to equip the National Guard with the latest possible type weapons as a first-line component of the nation's defense team."

The National Guard's two armored divisions—the 49th of Texas and the 50th of New Jersey—also are due to receive new 45-ton M47 tanks, equipped with 90 millimeter guns to replace World War II type tanks.

30,000 Tanks Built by Chrysler

Employment of approximately 2,400 people at the Chrysler Detroit Tank Plant is expected to continue during 1954.

R. T. Keller made this announcement during a press conference marking completion of the 30,000th tank built by Chrysler since the start of World War II.

At the same time, he said that the Armed Forces have formally authorized the production of the new tank retriever vehicle, called the T51, at the Chrysler Detroit Tank Plant, and set a target date for start of production of midsummer of 1954. The present contract for

the new vehicle amounts to approximately 48 million dollars.

Mr. Keller said, "We are now employing 3,400 people at the Detroit Tank Plant, approximately 1,000 of whom are completing Chrysler's M47 medium tank contract. We expect to continue to employ right along approximately 2,400 people, principally on our job shop work while we are tooling up for the T51. This number may be increased when actual production of the tank retriever gets under way."

He said, "Chrysler is going to attempt to put the retriever into production with only eight months' lead time—the shortest ever allotted for a vehicle of this sort."

During the last twelve years Chrysler Corporation has made 30,000 tanks of 16 different models both medium and heavy, starting with the General Grant in 1941. At present Chrysler Corporation is producing M47's here in Detroit and M43's and M48's in its Newark, Delaware tank plant.

"Chrysler Corporation's Ordnance Development Section which is a part of its Central Engineering Division," Mr. Keller said, "has participated in the engineering and design work on most of the tanks built by the Company. Under the new Government-Ordnance plans, this Section continues as the design agency for the M48 and the M43."

"This group is a large organization devoting constant and continuing attention to development and engineering work on many kinds of military vehicles," he stated, "and is working closely with Ordnance on future vehicles as well as current defense products."

Stretch-out at Delaware Tank Plant

Plans for a stretch-out of tank production at the Chrysler Delaware Tank Plant, assuring continued operation of the plant through 1954, were announced recently by Robert T. Keller, Chrysler Corporation vice president and general manager of tank manufacturing operations.

The plans drawn up by Chrysler officials were approved by Army Ordnance in Detroit.

Under the new program, a tank modification depot now under construction in Newark by Chrysler for the Army will be completed and used for storage of suppliers' machine tools. Processing and modification of tanks, previously planned for the depot, will be carried on in the tank plant in conjunction with the stretch-out of tank production.

Earlier plans had called for a complete close-out of tank production at the plant by April, 1954.

Redesignated

The 17th Armored Cavalry Group, which has been attached to the 1st Armored Division since the spring of 1952, has been redesignated by the Department of the Army as the 17th Armor Group.

The 17th Armor Group, commanded by Col. J. I. King, consists of the Group Headquarters and Headquarters Company, the 317th Tank Battalion (120mm Gun) and the 509th Tank Battalion (120mm Gun).

New Centurion Tank Factory Opened

LONDON—When General Alfred Gruenther, Supreme Allied Commander in Europe, flew from his Paris headquarters to Leyland, Lancashire, for the opening of the Ministry of Supply's great new Centurion factory, it was because the Centurion is, as Minister of Supply Duncan Sandys told him, "the only tank in service which can fire with accuracy on the move." It is a most potent weapon for the N.A.T.O. forces.

Mr. Sandys reminded General Gruenther that Britain has on the secret list a still heavier tank with still thicker armor—not a general purpose tank but a heavy support tank. This will be supplied to armored units as well as—and not in place of—the Centurion. And

Mr. Sandys revealed that British establishments are "at work on some quite new revolutionary developments" in tank production, details of which are still secret.

The Centurion remains the standard tank of the British Army. In the opinion of the British, the fifty-ton Centurion is as big and heavy as is practicable for a general purpose tank.

The fact that the ceiling in overall weight is now being neared restricts the amount of extra armor-protection which can be added to counteract the steadily improving performance of guns and ammunition. Consequently, in the field of armored warfare the power of attack is likely for some time to be more effective than the power to defend.

While at medium and longer ranges the thick frontal armor of modern tanks provides a high degree of protection, there is no tank in the world with sufficient armor to provide complete immunity from all angles and all ranges. However good the armor, it is better not to be hit—so that a tank which is able to fire at the enemy before the enemy fires has an enormous advantage.

The new factory at Leyland is part of a long-term policy to mass-produce these weapons. As a result of action taken by successive governments, a British tank-making industry such as never existed before the war has been brought into being, and tanks are being manufactured in the Government's ordnance factories and at two private firms at Newcastle and Leyland.

The present rate of production of these plants represents only a small fraction of their capacity. But so long as they are maintained as going concerns, tooled up with modern machinery and staffed with a nucleus of experienced technicians and work people, their output can be very rapidly expanded.

In addition to those being manufactured for the British Army, tanks are being made in substantial numbers for Britain's allies in N.A.T.O. Such over-



Maj. Gen. Arthur G. Trudeau
Assistant Chief of Staff
G2, Department of the Army

seas orders form an essential part of the production program.

These factories in the U.K. constitute the principal tank arsenal in Western Europe—a vitally important element in the war potential of N.A.T.O.

Mine Warfare Training Increased

The Chief of Army Field Forces has directed that the time devoted to mine warfare training be increased from eight hours to twelve hours.

The eight-hour period was set up during the Korean emergency and it is now possible to increase the training time devoted to this subject. Experience in Korea showed the need for additional instruction in marking mine fields to avoid losses from our own mines.

The use of anti-personnel mines was possible in the semi-stabilized conditions prevailing in the latter stages of the Korean fighting. Extensive mine fields were a great help in slowing the rush of Communist "wave" attacks. Should these conditions ever prevail again, American personnel will be well trained

in the use of all types of mines.

Communist troops made extensive use of "booby traps" in Korea, and the additional time devoted to mine training will enable the soldier to recognize and avoid such innocent-appearing devices.

The new mine warfare program includes functioning, arming and disarming American, allied and enemy mines, the employment of land mines, the types of mine fields, the use of anti-personnel and anti-tank mines, and familiarization with booby traps.

Washington Chapter Growing

At the September meeting of the Washington Chapter of the Armor Association a maximum number of people attended. One hundred forty-seven persons interested in mobile warfare were present.

Lieutenant General Geoffrey Keyes and Lt. Colonel Charles B. Hazeltine, Jr. were the two speakers for the evening. General Keyes spoke on "Armor in the Balanced Force" and Colonel Hazeltine's subject was "Armor in Atomic Warfare."

Plans for the next meeting were tentatively made at that time. Colonel Paul A. Disney was elected to head up the steering committee for planning for future meetings.

The next meeting is planned for early February. It is contemplated that Major General George W. Read, Jr., Chief of Staff, OCAFF, will be the principal speaker at that time. The reason for not holding the meeting earlier in the year, as originally planned, is that the steering committee decided to await the completion of the annual meeting of the national association, reported elsewhere in this issue, in order that those members of the local chapter unable to attend the meeting could receive a firsthand report.

Anybody interested in attending the next get-together can get up-to-the-minute details from either Colonel Disney or Major Donald B. Pollock. Both officers are stationed in the Pentagon and are listed in the phone book.

TOP COMMAND CHANGES



Gen. Mark W. Clark
To Retirement



Gen. John E. Hull
Commander in Chief, Far East



Gen. Charles L. Bolte
Vice Chief of Staff, U. S. Army

How would you do it?

SITUATION NR 1

You are company commander of a reinforced armored infantry company. You receive orders to attack a town. You know that this attack will require heavy ammunition expenditure. You also know that soldiers engaged in house-to-house fighting cannot be burdened with large amounts of ammunition. You must be capable of resupplying their ammunition needs often and without delay. What would you do?



AN ARMORED SCHOOL PRESENTATION

AUTHOR: CAPT W E HONEYCUTT

ILLUSTRATED BY PFC A P ZOELICK

SITUATION NR 2

Your company is part of a tank battalion in an infantry division. The division has been engaged in a position defense for almost a year.

A lieutenant reports to you for assignment. As company commander, you place him in command of the second platoon, which will probably remain in reserve for ten days. He replaces a lieutenant who has been rotated to the United States.

From reports and observation, you have noted these facts about this platoon:

1. It has a history of incomplete missions.
2. The men boast of the way they "bug out."
3. The platoon lacks the usual aggressive spirit of a good tank platoon.
4. Maintenance is poor.
5. Men of the platoon have consistently failed to comply with regulations regarding wearing of the uniform.

In discussing his assignment, you outline these deficiencies to the new platoon leader.

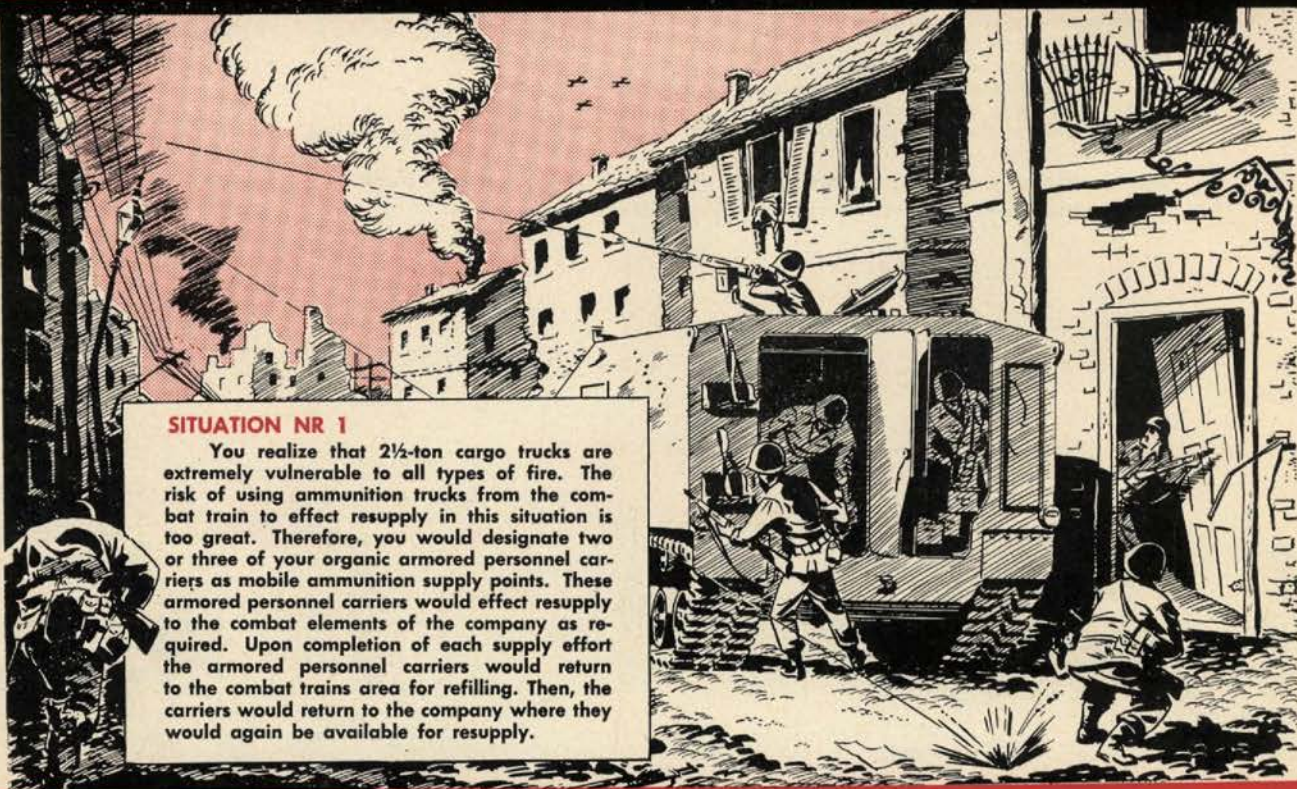
What advice would you give him to help him revitalize this platoon?



"How would you do it.?" solutions

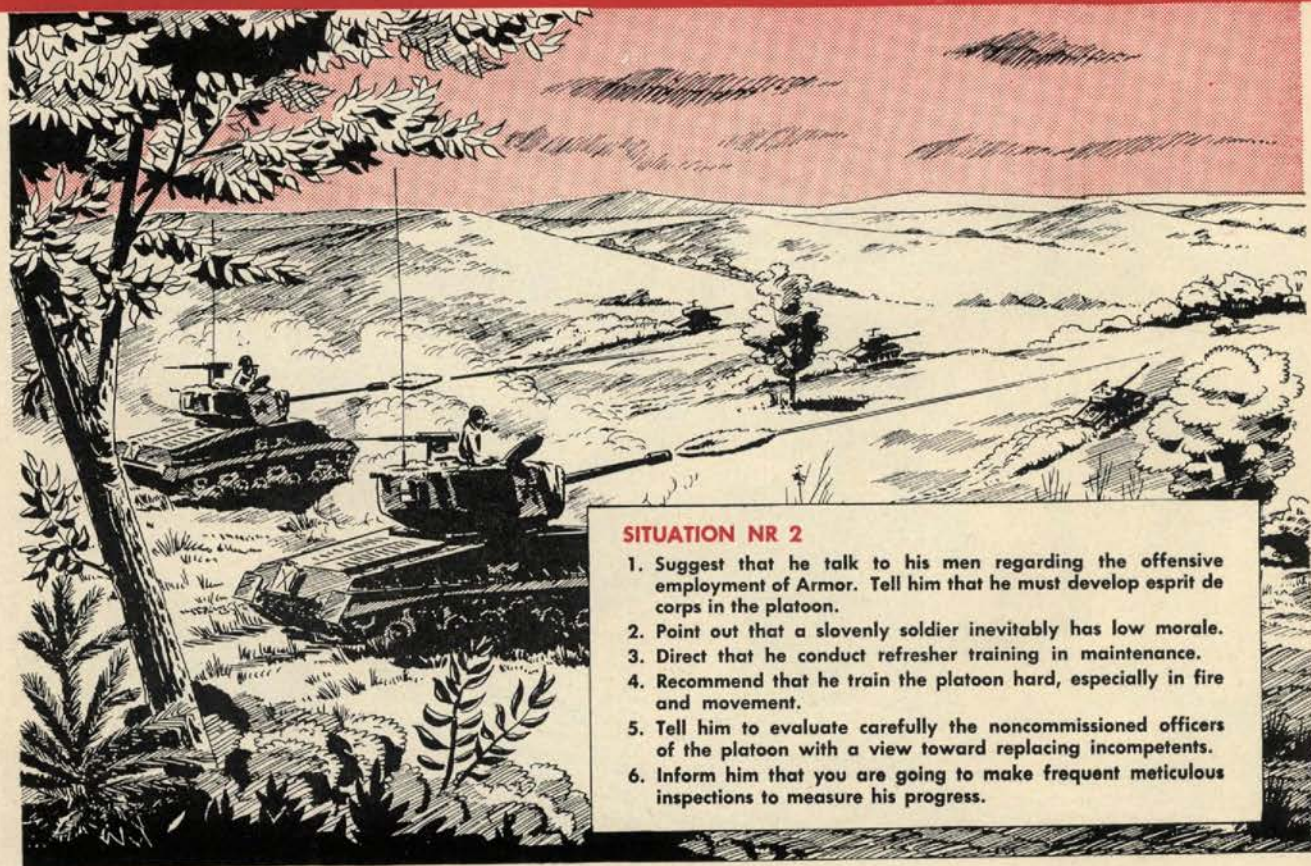
SITUATION NR 1

You realize that 2½-ton cargo trucks are extremely vulnerable to all types of fire. The risk of using ammunition trucks from the combat train to effect resupply in this situation is too great. Therefore, you would designate two or three of your organic armored personnel carriers as mobile ammunition supply points. These armored personnel carriers would effect resupply to the combat elements of the company as required. Upon completion of each supply effort the armored personnel carriers would return to the combat trains area for refilling. Then, the carriers would return to the company where they would again be available for resupply.



SITUATION NR 2

1. Suggest that he talk to his men regarding the offensive employment of Armor. Tell him that he must develop esprit de corps in the platoon.
2. Point out that a slovenly soldier inevitably has low morale.
3. Direct that he conduct refresher training in maintenance.
4. Recommend that he train the platoon hard, especially in fire and movement.
5. Tell him to evaluate carefully the noncommissioned officers of the platoon with a view toward replacing incompetents.
6. Inform him that you are going to make frequent meticulous inspections to measure his progress.



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ATOMIC WEAPONS IN LAND COMBAT

ATOMIC WEAPONS IN LAND COMBAT. By Col. G. C. Reinhardt and Lt. Col. W. R. Kintner. 182 pp. Military Service Publishing Company, Harrisburg, Pa. \$3.95.

Reviewed by
BRIG. GEN. R. W. PORTER, JR.

This provocative little book of 182 pages is well organized and easy to read. Also it is couched in non-technical language. It deals primarily with the problem of the tactical employment of the atomic bomb. I found it extremely interesting. It will prove of interest to all Army officers, particularly armor officers and others interested in mobile warfare.

In the introduction the authors deal in general terms with the impact of the atomic bomb on strategy. They point out that eight years of progress have made atomic material, initially very scarce, now relatively plentiful to the U. S., and it is essential to examine concepts to be used in employing the atomic bomb on the tactical battlefield.

The authors are very outspoken in their statements that atomic weapons require close unification of the Services. They indicate that "surface action, whether on land or sea, is as important to the air campaign as mastery of the air is vital to Army or Navy success. Both Air and Naval Forces are based on land. Hence, the

ground effort required to seize or retain base areas, from which the whole array of American power can operate, is the most influential factor in shaping our strategy."

Having disposed of strategic considerations in the introduction, the authors give background material and weapons characteristics in a section entitled "Placing Atomic Weapons in Tactical Focus." Based upon a quotation from the Chairman of the Atomic Energy Commission they develop the interesting thesis that the tactical employment of atomic weapons offers the chance of gaining the decision in battle without destroying the world. Their view is that in 1945 the lack of knowledge as to the capabilities of

The Reviewer



Brigadier General Robert W. Porter, Jr., a 1930 graduate of the Military Academy, served in Europe during World War II. He recently returned from Korea where he was assigned as Chief of Staff of the X Corps. He is presently assigned as Military Advisor to Director, Foreign Operations Administration.

The Authors



Colonel George C. Reinhardt, Corps of Engineers, is a 1924 graduate of Massachusetts Institute of Technology. Following a tour of duty as an Instructor in Atomic Weapons at Fort Leavenworth he attended the Industrial College. He is presently the Director of Military Art, The Engineer School, Fort Belvoir.



Lieutenant Colonel William R. Kintner, Infantry, is a 1940 graduate of the Military Academy. He served with Colonel Reinhardt as an Instructor in Atomic Weapons at the Command and General Staff School. He is presently en route to the United States from the Far East and will be assigned to G3, D/A.

the bomb, the need for great secrecy in its development and initial employment and the lack of good battlefield targets at the time the first bombs were available for use, made Nagasaki and Hiroshima logical targets. Without discounting the importance in the future of the delivery of the A-bomb by the Strategic Air Command, they point out that in the age of atomic plenty many decisive targets for atomic weapons will appear on the battlefield. They believe that population centers are no longer the primary targets. The authors then explain and compare various means of delivery of the weapons, discuss possible tactical atomic targets for atomic weapons.

Having outlined the capabilities and characteristics of tactical atomic weapons and having considered the advantages and disadvantages of their employment, the authors devote a chapter to offensive tactics. They emphasize that the classic concept of fire and movement for seeking a tactical decision on the battlefield remains a basic concept for the development of battle plans. They point out, however, that the point of application of the maneuvering element may be altered. The classic wide, deep development possibly will be abandoned. Instead, a violent frontal attack to pierce the defensive shell of the enemy's position will be employed and the mobile reserve element of the command will then be passed through this rupture in the enemy position to take advantage of the shock and disruptive effects of atomic weapons which have been placed

upon enemy artillery and reserve elements. They coin a new slogan for atomic tactics which paraphrases Napoleon: "Exploitation is to Destruction as three to one!"

They believe when both sides have atomic weapons, exploitation of a breakthrough becomes much more complicated. The commander must so time his movement of troops as to permit application of maximum pressure at the designated point without offering a mass target for enemy atomic weapons. Careful target selection and an accurate timing of supporting operations will permit the maximum exploitation of the characteristics and capabilities of atomic weapons. The need for streamlining staff operations and reducing the "reaction time" required to prepare all elements of the command for the atomic explosion are explained. "Accurate, timely information of the enemy can scarcely be overrated by the commander planning an atomic attack. Not only its significance to higher command echelons, but also its bearing upon the actions and orders of the division commander call for greatly improved intelligence procedures and techniques."

Other matters which will assist in the exploitation of the shock, blast and radiation effect are touched upon. Among these are the initial positioning of the exploiting force as close to the atomic target area as possible; inclusion of engineers in the exploiting force and the importance of the exploiting force quickly by-passing obstacles and closing with the enemy while he is still shaken, confused and

unable to deliver effective defensive fires.

The authors ask if tactical A-bombs can plug holes developing in a defensive position. They then develop problems which affect the organization of a defensive position, assuming the enemy possesses infantry, artillery, armor and strong supporting tactical air forces, and conclude that the atomic weapon can be of great assistance to the defender.

"The use of atomic weapons against land forces is militarily sound. Aggressor armies threatening Western security stress the employment of massed artillery, tanks and infantry against an objective." Our forces can be made superior in quality and in battlefield mobility. With the skillful handling of atomic weapons, on or near the battlefield, our qualitatively superior forces should be able to smother the enemy's human-wave mass attacks.

The authors caution that "the tactical employment of atomic weapons is no simple, cheap, easy solution to our vital security responsibility. The United States and its Allies will still need many divisions, backed by adequate tactical airpower. The power of nuclear fission, used tactically, can make it unhealthy for an aggressor to mass his armies, but it cannot by itself win decisive victories. The West must possess sufficient ground divisions to counter hostile land forces operating in open formations."

The commander must so plan his defense that by strength of forces, by strategem or by maneuver, or by these in combination, he will cause the



Inspecting an M24 for radiation after a Nevada test blast.



Troops moving into blast area, checking equipment damage.

enemy to concentrate his forces in such a way that suitable atomic targets are presented. These considerations give the commander a difficult problem. He must so dispose his forces that he can compel the attacker to mass if he is to advance. However, he must keep his forces dispersed to such an extent that they do not offer suitable targets for atomic weapons or, if they are subjected to an atomic bombardment as a prelude to a general enemy attack, they do not lose their fighting capabilities.

In discussing the intelligence estimate, which is an essential prelude to the preparation of sound defensive plans, it is emphasized that an accurate appreciation of the enemy's atomic capabilities and his probable mission must be considered carefully. It is pointed out that the terrific power of atomic weapons gives the defense a considerable advantage because they will be dug in and will not be as vulnerable to attack as will the attacker. However, against the increased protection of the defensive forces must be weighed the advantages accruing to the attacker from surprise and shock followed by a rapid exploitation by enemy forces. To cope with this will call for skillful employment of reserves. The counterattack is still an essential part of defensive operations and it is a part of the counterattack that the defender very probably will employ atomic weapons. Also, atomic weapons can be used by defending forces to destroy enemy reserves. Reserves massing for exploitation of a breakthrough by front line elements or vital communications lines, the destruction of which will prevent a successful attack, make profitable targets. In desperation atomic bombs may be used to attempt to overcome superior enemy strength applying unbearable pressure on the defensive front. This employment will require very precise target selection and skillful timing. While not recommended, this use of atomic weapons may be expected in a crisis.

Psychological conditioning of troops to permit exploitation in defense of atomic weapons is essential. To achieve this, false notions as to radiation and other dangerous characteristics of atomic weapons must be dispelled. "In a word, all grades must be imbued with confidence in our



The 280mm cannon, recently deployed to Europe, adds strength to NATO forces.

newest weapon and an eagerness to participate in its use against the enemy."

The authors discuss airborne, amphibious, special operations and logistics in general terms. "Airborne missions, in the exploitation of atomic strikes, will normally be short range—10 to 50 miles from the front lines."

In discussing future amphibious operations, the authors believe the principles of amphibious operations need not be changed but procedures must be revised. They explain how present amphibious tactics can be revised employing atomic weapons and conclude that small amphibious forces utilizing the efficiency of atomic weapons, improved communications and new landing techniques will be required and can secure a beachhead, providing they have effective sea support and air cover which prevent overwhelming concentrations of the enemy from moving against them.

In discussing atomic age logistics it is shown to be vitally important that accurate estimates of requirements are made. The authors warn "against the Allied, particularly American, habit of overstocking supplies all the way from front line battalions to base ports." They ask that logistical doctrine be revised to set up more flexible supply procedures and that supply levels be kept to the minimum.

The method of delivery of atomic munitions is discussed in a chapter

entitled "Tac-Air on the Atomic Battlefield." This portion of the book opens with the statement that "even the most experienced veteran of land warfare, insisting that battles on the ground decide wars, never denies the immense influence of airpower in winning those battles. Superweapons have not diminished the importance, to the ground commander, of air superiority over his particular battlefields. They have made command of the air more important than ever." Atomic munitions which can be delivered by missiles and artillery as well as by the airplane and other means will certainly be available in the future. The authors point out the present greater range of the airplane over artillery and missiles and then discuss the advantages of employing each of them to deliver atomic munitions. They take up the airfield problem, fixed or floating, and then look at the future in which the race between new weapons and new means of defense against these weapons will decide what the best means of delivery will be in each situation. The feasibility of withdrawing forward elements to a safe distance before atomic missiles are exploded is questioned. "Success of this maneuver depends upon such perfect security on our part, and such nit-wittedness on the part of the enemy, as to approach absurdity. . . . It is not recommended for beginners, nor is it practical

SOVIET MILITARY DOCTRINE

by

Raymond L. Garthoff

Soviet Military Doctrine is an analytical study of Soviet "principles of war." It inquires into the guiding doctrine of Soviet armed forces, the foundation of their strategy, and their employment in war. It is neither a popular treatment of the Soviet Army nor an anecdotal history of that army in World War II. Prepared as part of the research program undertaken for the United States Air Force by The Rand Corporation, it is the only serious study we have of the basic military science of the USSR.

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against alert opposition."

The problem of training troops for atomic warfare is covered in considerable detail. Sections are devoted to protective measures, decontamination, medical aspects, effects on equipment, effects on food and water and effects on military installations. It is then stated that "Like the principles of war, training *principles* are still the bedrock foundation of our efforts. Only their application need be expanded and in some fields altered. The time-honored categories still hold good: specialist, individual, and unit training." While adequate texts do not exist and because of progress in the atomic field, those prepared may become partially obsolete by the time they are received. However, "common sense application of atomic indoctrination to the unaltered principles of tactics will develop the changes in techniques for small units and, progressively, for the division."

As far as specialist training is concerned, the obvious goal is that every general staff officer should be a well qualified atomic tactician. In addition, radiological defense officers and noncommissioned officers should be trained to assist division lower unit commanders. Pointers on individual training and unit training are covered as are possible types of division atomic training exercises. In all training, aggressive action must be demanded of all units. Reliance must be placed on radio communications. Planning is not enough; atomic maneuvers are required to prepare the soldier to act calmly regardless of confusion around him.

The final chapter deals with command in atomic warfare. The commander now has a concentrated power at his disposal which demands newer and more exacting skill and handling. His problems are briefly outlined. Leadership must be instilled in all troops, those in rear areas as well as those in forward combat positions. "The lesson for atomic weapons, is plain if extremely difficult. American troops must look upon atomic weapons as *their safeguard and the enemy's terror*, not the reverse." The atomic casualty problem will probably be one of increased concentration in time and space rather than of increased totals. "From a numerical standpoint, a division is most unlikely

to be wiped out, but whether its thousands of scattered shaken survivors remain an effective military organization will depend, in a great measure, upon the leadership it actually receives." This puts a premium on training based upon wise, experienced leadership. "All of discipline and much of mobility is directly the result of leadership."

Success in the exploitation of an atomic attack will only be possible when good battlefield intelligence is available to the commander. He must know the location of divisional "centers of mass." Delivering an atomic missile swiftly enough to destroy the effectiveness of mass before it can move and completing the destruction with ground troops will bring tactical success. The authors believe that while divisions will not be acting alone in exploitation, except in rare instances, flank and rear contact will be vague or nonexistent. "Prompt, ruthless destruction of the shell of resistance, better obtained by instant penetration rather than by maneuver, must be the immediate objective of the exploiting divisions." All the elements of a hard hitting war of maneuver will be involved. Calculated audacity will count for more than mass. Reconnaissance in force will be the rule. "Enemy reserves will probably be hastily assembled, and therefore less prepared for contact than our own formations. Friendly intelligence, forewarned of the need, must serve commanders effectively to retain the advantage of surprise as the exploitation continues." Logistics must be based upon the slogan: "Know what you really need." "Coldly planned audacity will reap vast rewards in logistics no less than in tactics."

In considering the problem of command in an atomic defense, the authors believe that only in dire emergency should atomic munitions be used for the destructive effect alone. "Enemy units shattered or shocked by the explosion must be destroyed before they can recover an appreciable measure of their combat effectiveness." Austerity must govern or disaster will follow and this applies to the rear areas as well as to the tactical battlefield. The real meaning of dispersion is to prevent concentrations of personnel or equipment from offering the enemy destructive targets which can

be subjected to destruction. There must be no more supplies than actually are needed at the time and place of receipt. This implies a risk-taking in combat. Also all staff functions must be streamlined. "For there are clearly new tasks for the staff. Every tactical situation must be studied for its relationship to atomic weapons, ours and the enemy's. Alternate plans and orders must anticipate emergencies, whether favorable or otherwise." Atomic warfare puts a premium on swift, unified staff action and upon all troops living more like front line troops live. "Position warfare has become an anachronism. It is mobility that counts now. Mobility does not depend entirely upon transportation and fuel supply. There is a limit beyond which additional means of transportation become 'impedimenta.'" We must have better communications with fewer operators; we must rely on radio; we must have alternate command posts, skeleton staffed and radio equipped for command echelons down to a regiment.

In tomorrow's troop organization the authors believe the trend will be to smaller self-sufficient combat formations and they suggest that the present armored division organization has advantages over the infantry division organization. They believe that a commander must be prepared to divide his command among more than three or four subordinates. Orders must not pass through unnecessary successive layers of command. Speed in staff action and in communications must be the order of the day.

The book closes with a brief statement of the importance of remodeling our military doctrine now that both the NATO Allies and the Soviets have atomic weapons. The authors are confident that the free world is alert to the problems posed by tactical atomic munitions and can devise better tactical doctrine for their deployment than possible opponents who embrace communism.

Colonel Reinhardt and Colonel Kintner have made a real contribution by this direct, brief work on the use of tactical atomic munitions. They have posed problems skillfully and have suggested solutions to most of the problems presented.

Any experienced military reader will at once think of other problems

which need to be solved. Among these are the need for increased emphasis upon making the Infantry division more mobile by improved radio communications and simplification of its battle equipment. Emphasis should also be placed on increasing the number of our major armored units.

The sound concepts of the authors point up the need for a reexamination of the actual mobility of the U. S. Infantry and Armored Division. World War II experiences, while helpful, will not be conclusive. It is often forgotten that the German commanders were not free to employ their best military judgment in the handling of their forces. Hitler had directed them to stand and fight. They were forbidden to make strategic and often tactical withdrawals. They were not able to reconstitute reserves by fighting delaying actions on strong terrain until they could launch sound, strong counterattacks. Furthermore, they were short of artillery and they lacked air support. The Allies possessed overwhelming air superiority. Based upon my service during the past few years, I believe that the U. S. Infantry Division does not place primary reliance upon radio for communications. At present they do not possess the equipment or follow the tactical doctrine which will permit this. Consequently, they are not well adapted for employment in a mobile role. Further Armored units, capable of independent, deep, bold, exploitation operations in conjunction with airborne units, are woefully inadequate. It would appear then that we lack the mobile elements to exploit our great technological developments in the atomic field.

Much attention will have to be given to problems of command-control with skeleton staffs divided between alternate command posts. Intelligence operations at all echelons must be vitalized. Streamlined aerial photography techniques which give the using intelligence agencies aerial photographs a few minutes after photographs are taken must become a reality.

I hope this book will be widely read and discussed by professional soldier and citizen soldier alike. It provides a good nontechnical point of departure for those who must be prepared to win tomorrow's tactical atomic land battles.

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